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Introduction

The outstanding feature of the weather in 1938 was its abnormal warmth. For the country as a whole, it was one of the warmest years of record. The greatest abnormalities in temperature occurred in the interior of the country. The precipitation for the year in most States was also above normal. Since the recent drought years, 1938 was the second in succession with somewhat above-normal rainfall. The first half of the year was unusually wet, but the latter half brought harmful deficiencies in moisture to some midwestern sections, especially the normally drier areas of the Great Plains. The South Atlantic and Gulf areas and the northern Great Plains were relatively dry.

The winter of 1937-38 was uniformly mild throughout the country and this condition, accompanied by abundant rainfall, continued throughout the spring. However, in March the entire Atlantic coast showed a deficiency in moisture and in April dry areas occurred in scattered sections, especially in the Southwest. May did not show the decided above-normal temperature of the first part of the year, the northeastern, Middle Atlantic, and a large section of the northern Great Plains and Rocky Mountain regions being cooler than usual, brought the country as whole an average of about normal temperature. This feature was reflected in insect abundance.

The summer was characterized by relatively high temperatures and, during most of the period, by abundant rainfall. The temperature averaged above normal in all sections, except for very limited areas. With the exception of South Carolina and Florida, all States east of the Mississippi River had above-normal rainfall for the season. Between the Mississippi and the Rocky Mountains all States except Louisiana, Iowa, and Montana had below-normal rainfall. This condition existed during June in Minnesota, North Dakota, and South Dakota; however, during the first part of September the droughty conditions in most of this area were relieved by general rains. In the more western areas all States except Idaho, Wyoming, and Nevada received below-normal rainfall. The abnormal warmth continued through September. Precipitation was abnormally heavy from North Carolina northward and was also above normal over a belt from Lake Michigan southwestward to Colorado and northern New Mexico. Other parts of the country were largely deficient in precipitation. October was abnormally warm over the entire country and was extremely dry. From the Great Plains eastward it was one of the driest Octobers of record. On the other hand, the rainfall was relatively heavy in central and northern sections from the Rocky Mountains westward. The warm weather continued into a very warm fall.

The effect of the weather on insect abundance may be seen in the case of grasshoppers. The cool, rainy weather of May retarded hatching, but permitted a profusion of range grasses. In June the weather was warm and dry in western North Dakota and northwestern South Dakota, favoring the development of grasshoppers. The grasshoppers, having abundant food, rapidly reached maturity and the grasses were eaten down and dried up by the dry weather, resulting in heavy flights of grasshoppers from this area into eastern Montana, the Red River Valley, and Canada.

In its effect upon the chinch bug the season of 1938 almost duplicated that of 1937. The insect overwintered successfully but the wet, cool weather in the spring was detrimental to it, and in the fall the dry, warm weather favored increased populations and hibernating conditions.

GRASSHOPPERS

The greatest damage occurred in the northern Great Plains States in and near the overlapping zones of short and long grass and where the annual rainfall for the last 2 years has amounted to less than 20 inches. Repeated crop failures in these dry areas resulted in large acreages in reverted and idle lands. These areas bred tremendous numbers of Melanoplus mexicanus Sauss. and resulted in destruction of crops through migration of nymphs to adjoining crops and through flights of adult grasshoppers to distant fields.

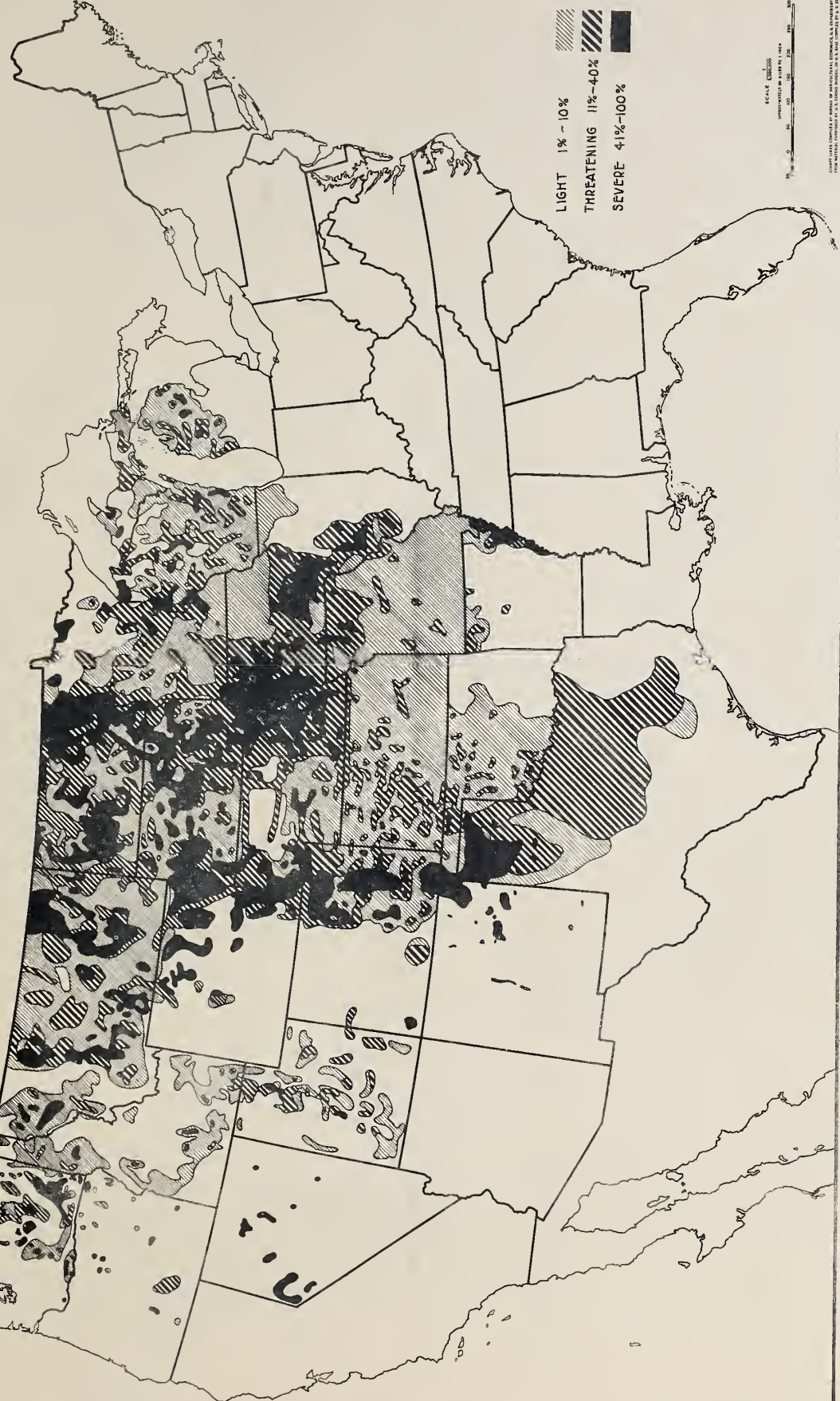
In the southwestern portion of the Great Plains area, including the southeastern counties of Colorado, the northeastern counties of New Mexico, and Panhandle counties of Texas which adjoin New Mexico, Dissoteira longipennis Thos. occurred in numbers large enough to produce flights late in the season. Very large numbers of grasshopper eggs were deposited in the fall of 1937 and hatching in the spring spread over a long period of time. The value of the crops lost amounted to \$83,841,000 and it is estimated that \$176,442,000 worth of crops were protected by control measures. The most serious damage occurred in North Dakota, South Dakota, and Nebraska, North Dakota reporting over \$24,000,000 damage and South Dakota and Nebraska each reporting over \$11,000,000 damage. Kansas and Montana each reported over \$6,000,000 damage, Wisconsin reported over \$4,000,000, Oklahoma, Missouri, and Colorado each reported over \$2,000,000 damage, while Iowa, Minnesota, and Texas each reported over \$1,000,000 damage. Very severe damage also occurred in Arizona, California, Idaho, Illinois, Michigan, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

A map showing the results of the fall egg survey is included.

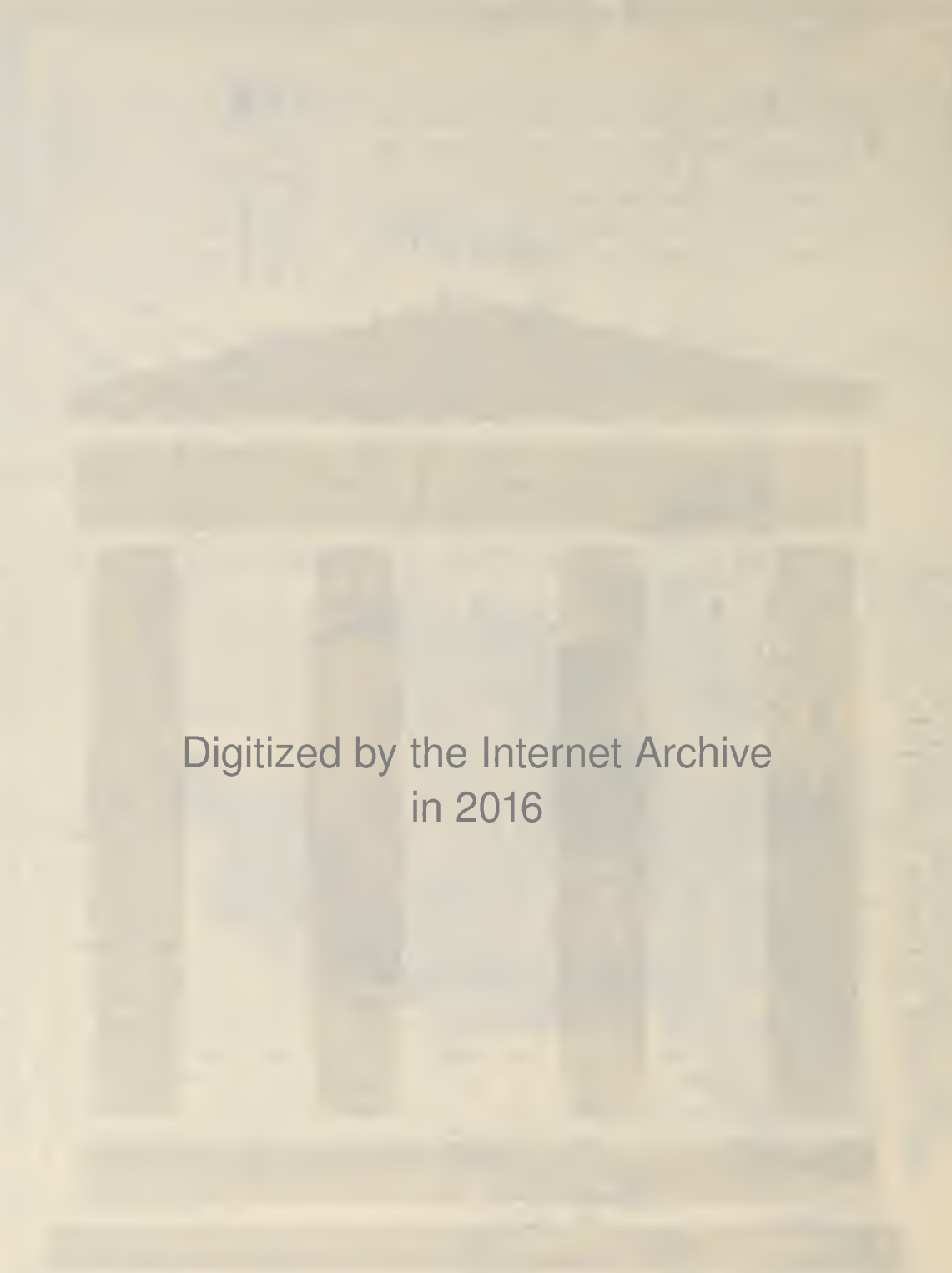
EUROPEAN CORN BORER

Although general scouting to determine the dispersion of the corn borer was not conducted in 1938, observations made by State personnel in Wisconsin, Indiana, and Virginia indicate that only a slight increase occurred in the total infested territory. New infestations were observed in two counties in Wisconsin and two in Virginia. No new county infestations were found in Indiana, although infestations were recorded in 1938 in a number of townships not previously reported as infested, within infested counties. A single specimen of the corn borer collected at Arlington, Va., indicates that additional dispersion had occurred in the Eastern States, although abundance levels are too low to determine its approximate extent, except by intensive scouting. In the Lake States the general

FALL GRASSHOPPER SURVEY 1938. INFESTATION OF CROPS EXPECTED IN 1939.



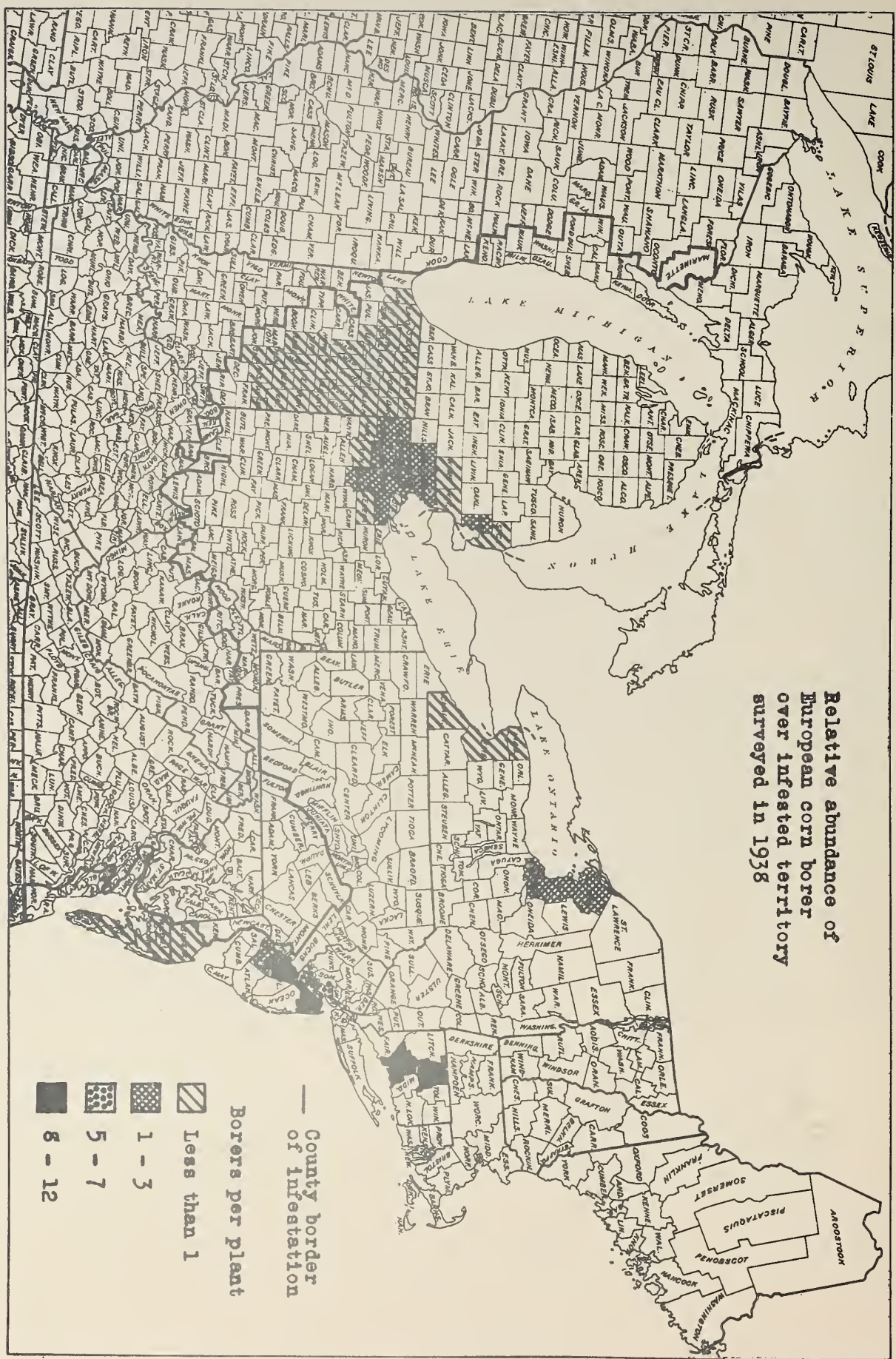
UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE, WASHINGTON, D. C.



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Relative abundance of
European corn borer
over infested territory
surveyed in 1938



trend of population in 1938 showed an increase over 1937, although the average population in some counties at the western end of Lake Erie showed little change, with some decreases noted in southeastern Michigan. The average borer population in the surveyed sections of Michigan and Ohio (including principally the older infested counties of these States), following a uniform annual increase since 1934, reached the highest level recorded for this section to date. Similar conditions occurred in Indiana where, while the general borer level is low compared with older infested areas, populations were higher than found in any previous survey. Of particular significance in the Lake States was the occurrence of an infestation that averaged 17 borers per plant in early market sweet corn in the Toledo, Ohio, truck district, an increase in the occurrence of a second generation, and light infestations in crops other than corn including potatoes, peppers, and dahlias. In the Eastern States in 1938, populations of the corn borer continued at a high level in Connecticut, averaging 10 borers per plant in Hartford and New Haven Counties, and a rapid rise in infestation by the second generation of the borer in central New Jersey resulted in some of the highest populations in field corn yet observed in the United States. The population in Monmouth, Middlesex, and Mercer Counties, N. J., averaged over 7 borers per plant, with 57 percent of the fields surveyed averaging over 5 borers per plant; 21 percent averaging more than 10 borers per plant; and 4 percent averaging over 25 borers per plant. Infestation decreased sharply on the Eastern Shore of Virginia and no significant change was observed in the status of the insect in southern Delaware and the Wicomico-Worcester County section of Maryland. Populations in early market sweet corn in the New Haven, Conn., district averaged 9 borers per plant, while heavy infestation was not yet apparent in the extra early "Beverly" truck crop district in New Jersey. Increased infestations over 1937, by the first-generation borer, occurred in white potatoes in central Connecticut and west-central Massachusetts, with a decrease of the insect's abundance being observed in this crop on eastern Long Island, N. Y. Severe infestations in dahlias occurred throughout New England and southward along the Atlantic coast, including the lower Hudson River Valley, to central New Jersey. Favorable weather prevailed in the Lake States in 1938, with adequate and well-distributed moisture in the field during the critical stages of the insect's development. In central New Jersey meteorological factors were advantageous to the second-generation borer and seasonal conditions in New England were generally favorable. The occurrence of floods and a hurricane in the latter region, however, made necessary the abandonment of the fall survey in Massachusetts, although observations indicate that the storm had no direct effects on prevailing borer populations. Extremes of drought and excessive precipitation during oviposition periods of the borer contributed to the low populations in Delaware, Maryland, and Virginia. (W. A. Baker, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

HESSIAN FLY

At harvest time the surveys of wheat stubble, made by the Bureau of Entomology and Plant Quarantine field stations and cooperating State agencies, indicated that hessian fly populations were from low to moderate in Nebraska, Kansas, Oklahoma, Missouri, Illinois, the southern half of Indiana, central Ohio, Kentucky, Tennessee, western and south-central Pennsylvania, Maryland, Delaware, and Virginia. However, there were menacing populations of flies in local fields and areas in most of these States or districts. Marked increases of fly occurred throughout the northern half of Indiana and the northwestern counties of Ohio.

Slight-to-moderate increases of infestation were recorded for central Ohio, eastern and northern Pennsylvania, northwestern and south-central Virginia, and north-central North Carolina. In the wheat seeded in Pennsylvania in the fall of 1938 light-to-moderate infestations occurred in the western part, heavy infestations in the central part, and light infestations in the eastern part. Generally light infestations were found in Maryland and Delaware. For Ohio, Indiana, Illinois and Michigan volunteer wheat was moderately to heavily infested, but infestation was limited to rather isolated localities where sufficient rainfall occurred. Early sown fields of wheat showed moderate-to-heavy infestation, depending on local conditions of moisture. In general, where the safe-seeding dates were adhered to, light or no infestations were recorded. In parts of northern and central Indiana, especially where the harvest-time survey of stubble indicated a heavy infestation in prospect, many early sown wheat fields, even those seeded near the safe date, show rather severe injury, although the favorable fall weather permitted these fields to partially outgrow the damage. No damage to fall-sown wheat was reported from Kentucky and Tennessee. For Iowa, Nebraska, Kansas, Missouri, and Oklahoma the drought caused conditions unfavorable for hessian fly during the fall months. Volunteer wheat was generally absent but when occurring in localized areas it showed light-to-moderate infestations. Infestations to regular fall-seeded wheat were generally light, with damage negligible, the larger acreages of wheat having escaped infestations by delayed germination of the seed until the fly season ended. (W. B. Cartwright and Curtis Benton, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

CHINCH BUG

The threat of moderate-to-severe infestations in scattered localities from western Indiana across Illinois, southern Iowa, central and northern Missouri, into southeastern Nebraska, eastern Kansas, and northeastern Oklahoma, as indicated by numbers of bugs in hibernation at the beginning of the year, was to a large extent removed by the cold, wet spring, unfavorable to establishment and increase in the small grains. The warm, dry weather late in the summer and fall was very favorable for the maturing of the summer generation in corn and its successful establishment in winter quarters. As a result, there are many localities in which the bugs are from moderately to extremely abundant in an area extending from central Ohio across Indiana, Illinois, the southern three tiers of counties in Iowa, and north-central Missouri. While no reports are available from Kansas or northern Oklahoma, fragmentary notes have been received which indicate the presence of at least spotted infestations in southern Oklahoma and north-central Texas. Should weather conditions be favorable to the bugs next spring, moderate-to-severe local infestations may occur over a rather large area in the Central States. (C. M. Packard, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

MORMON CRICKET

It was estimated in the fall of 1937 that over 4,000,000 acres in Nevada, Utah, Idaho, Washington, Oregon, Montana, and Wyoming were infested with Mormon crickets. In the fall of 1938 the known infested area had increased to 18,900,000 acres. In 1938 infestations were found in Nebraska, North Dakota, and South Dakota. Damage to crops in 1938 amounted to over 5 percent, and damage to range amounted to 14 percent. Over 235,000 acres of crop land and over 12,881,000 acres of range land were infested. It is estimated that over 1,375,000 crop acres were

protected from Mormon crickets by control campaigns. Mormon crickets hatched in some areas as early as the latter part of February and in other areas as late as the second week in June. Included among the natural enemies of the Mormon cricket are: The egg parasite Sparaisson pilosum Ashm.; the wasp predator Palmodus laeviventris Cress.; an unidentified wasp; a scarabaeid larva, Aphodius denticulatus Hald.; sarcophagid flies; a round worm, Gordius sp.; spiders; reptiles; rats; mice; moles; badgers; coyotes; dogs; scorpions; and many species of birds. Range rehabilitation in many parts of the Northwest has been seriously handicapped by the crickets feeding on the flower heads and seeds of range plants. Grasses constitute over 20 percent of the recorded food plants, weeds about 65 percent, browse plants about 15 percent, and sedges and similar plants less than 5 percent. Both egg and adult surveys were conducted during the latter part of the summer and in the fall of 1938, to determine the intensity of infestation. The following table gives the infested acreage by States.

Mormon cricket infestation, fall of 1938

State	:Acres infested (including agricultural lands)			
	: Heavy	: Moderate	: Light	: Total
	: Number	: Number	: Number	: Number
Colorado	: 0:	: 0:	: 0:	: 0
Idaho	: 53,500:	: 130,120:	: 650,560:	: 834,180
Montana	: 2,034,660:	: 2,670,245:	: 3,046,530:	: 7,751,435
Nebraska ^{1/}	: 0:	: 0:	: 8,480:	: 8,480
Nevada	: 337,020:	: 717,980:	: 1,223,328:	: 2,278,328
North Dakota ^{2/}	: 0:	: 35,800:	: 535,800:	: 571,600
Oregon	: 37,120:	: 472,800:	: 346,660:	: 856,580
South Dakota	: 6,900:	: 88,300:	: 1,943,800:	: 2,039,000
Utah	: 9,470:	: 13,030:	: 148,221:	: 170,721
Washington	: 1,920:	: 98,900:	: 183,580:	: 284,400
Wyoming	: 311,240:	: 490,430:	: 2,022,516:	: 2,824,186
Total	: 2,791,830:	: 4,717,605:	: 10,109,525:	: 17,618,960

^{1/}In addition, 152,480 acres are very lightly infested.

^{2/}In addition, 1,147,900 acres are very lightly infested.

ALFALFA WEEVIL

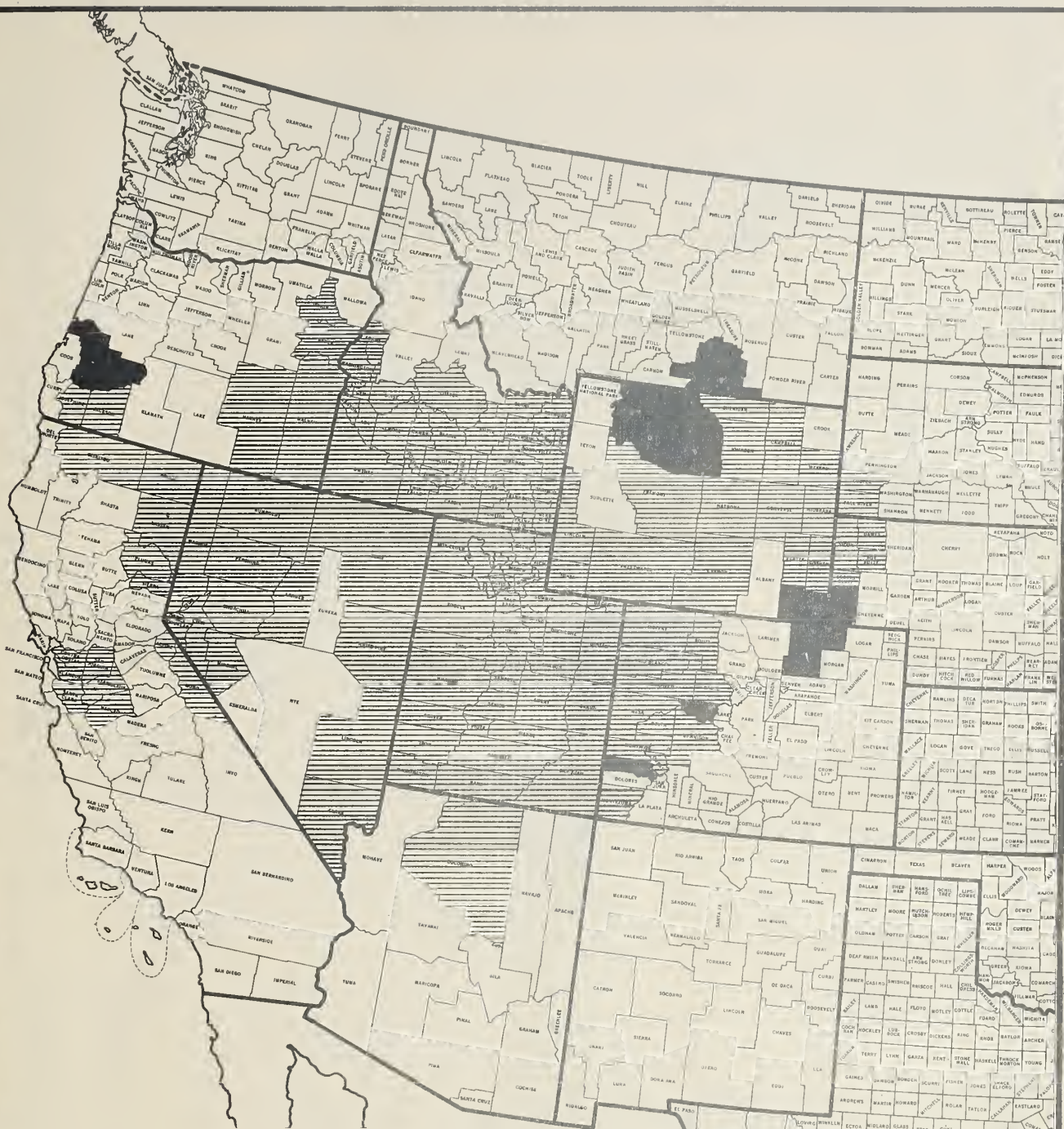
Alfalfa weevil populations, as determined by the 1937 fall survey, were generally more threatening than for several years. Damage was indicated in 40 to 50 percent of the alfalfa fields in Box Elder County, Utah, and Jackson County, Oreg.; in 17 to 33 percent of fields in Salt Lake and Sanpete Counties, Utah, the upper Snake River Valley of Idaho (Bingham, Bonneville, Jefferson, Madison, and Fremont Counties); Eagle Valley, in Baker County, Oreg.; Douglas and Washoe Counties, Nev., and Delta and Mesa Counties, Colo. Weevil damage threatened to affect 10 percent or less of fields in Sevier County, Utah; the lower Snake River Valley, in western Idaho and eastern Oregon; Churchill County, Nev.; Montrose County, Colo.; and Sioux County, Nebr. Actual developments in 1938 were as follows: Severe damage occurred in 50 percent of fields in Douglas County, Nev., and the upper Snake River Valley of eastern Idaho and in 35 percent of those in Sanpete County, Utah; moderate injury affected 15 percent of fields in Box Elder and Uintah Counties, Utah; slight damage occurred in 25 percent of fields in

Jackson County, Oreg., and in from 5 to 12 percent of the fields in Salt Lake, Duchesne, and Sevier Counties, Utah, Eagle Valley in Baker County, Oreg., Mesa, Delta, and Montrose Counties, Colo.; Washoe and Churchill Counties, Nev., and Fremont County, Wyo.; negligible weevil damage occurred in the remainder of Utah, Oregon, Wyoming, southern and western Idaho, the infested lowland district of central California; and in the infested area of western Nebraska. Expected damage in western Colorado failed to materialize because of winter reduction of weevil populations, coupled with excellent growing weather in the spring and advanced harvest of the first crop; damage in Box Elder and Salt Lake Counties, Utah, and in Jackson County, Oreg., was kept below the expected level by general cutting of the first crop at early maturity; damage exceeding the estimates resulted from greatly belated cutting in the upper Snake River Valley of Idaho and in Douglas County, Nev.; in other districts the damage experienced was in close agreement with that indicated by the survey. Alfalfa-seed-growing districts, where less frequent cutting tends to produce large weevil populations, also experienced damage during 1938. In Millard County, Utah, 30 percent of the fields were severely damaged and in southern Idaho (Jerome, Gooding, and Shoshone Counties) weevil damage seriously interfered with seed production from the first crop. Scouting by the alfalfa weevil laboratory staff, in cooperation with State organizations, resulted in original discovery of the alfalfa weevil in 12 additional counties, viz: Pitkin, San Miguel, and Weld in Colorado; Banner and Kimball in Nebraska; Douglas in Oregon; Big Horn, Hot Springs, Laramie, Park, and Washakie in Wyoming; and Big Horn County in Montana. This is the first field infestation discovered in Montana. A detailed account of the survey has been issued as a Supplement to Insect Pest Survey Bulletin, No. 9, December 27, 1938. (J. C. Hamlin and W. C. McDuffie, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

VETCH BRUCHID

The vetch bruchid began emerging from hibernation quarters in North Carolina in April, the first adults being swept on April 18. They were present in all vetch fields by the first of May and, owing to the mild winter, the bruchid population was about the same as it has been in the last 4 years of observation, even though fewer adults were produced in the 1937 seed crop. Egg deposition began on May 4 and the last viable egg was found in the field on July 2. There were two definite peaks of oviposition this year, as a result of unseasonable weather in the latter part of May. The first peak was reached on May 19 and the next peak on June 6. Much heavier egg deposition was noted this year, as compared with last year. This can be accounted for by the favorable spring and the slower maturity of the vetch crop, which prolonged the period when pods were available for egg deposition. In 1937 on the row of Vicia villosa in the vetch varietal resistance experiment the daily egg count on 50 pods selected at random produced a total of 2,947 eggs during the period of egg deposition, while this year the same variety had a total egg count of 6,466. The weevil population in the 1938 crop of seed is just a little above the average of 50 percent usually prevalent in North Carolina, the average this year being 53 percent. The maximum infestation found in any field was 96 percent and the minimum 2 percent.

During the course of the year the known distribution in the East was increased by four counties in North Carolina, namely, Chatham, Surry, Wake, and Wilkes. In August the insect was discovered for the first time on the west coast in a number of vetch fields in the northern Willamette Valley of Oregon; in



LIMITS OF AREA KNOWN TO BE INFESTED BY ALFALFA WEEVIL



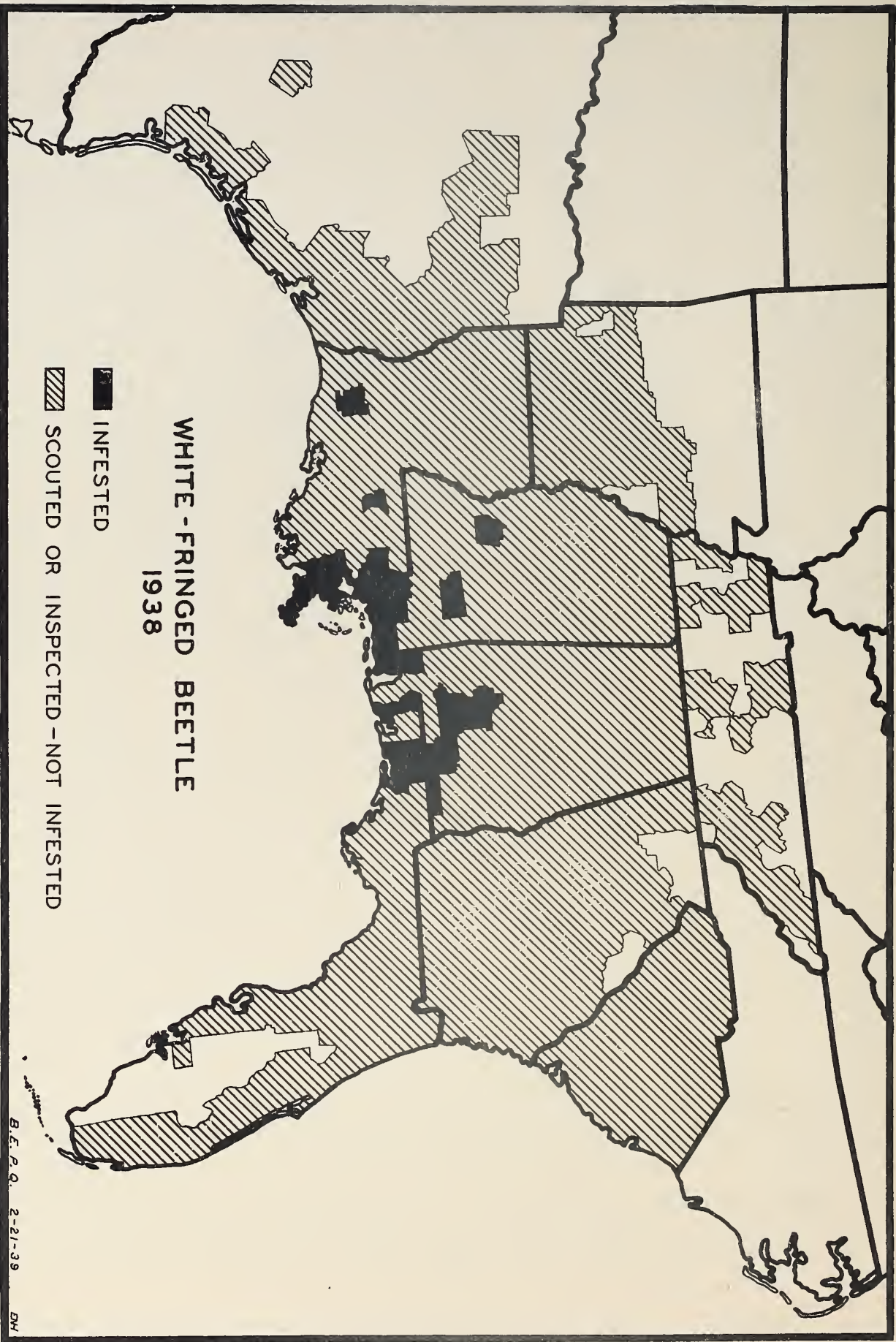
COUNTIES INFESTED PRIOR TO 1933



COUNTIES FIRST FOUND INFESTED 1933

INFESTED
SCOUTED OR INSPECTED - NOT INFESTED

WHITE-FRINGED BEETLE
1938



Clackamas, Hood River, Marion, and Washington Counties, Wash. It was also found in seed cleaning mills where the weevil was found in seed being processed or on the premises in Multnomah County, Oreg., and Clark and Cowlitz Counties, Wash. As this infestation was discovered late in the season, after the vetch crop had been harvested, cleaned, and part of the seed shipped, it was too late for a thorough survey to be made to determine the extent of the area infested. The data on the western infestation was furnished by L. P. Rockwood, of the Forest Grove, Oreg., laboratory.

Collections of bruchid-infested seed were gathered in North Carolina and in Pennsylvania during the summer and placed in rearing boxes for the issuance of parasites. No parasites were reared from this material other than those reported in former years. Rockwood reports finding one specimen of Bruchobius mayri Masi from bruchid-infested seed at Reedsville, Washington county, Oreg. This gives a new distributional record for this parasite, which was first found in this country in 1936 and which has been reported only from Rowan and Iredell Counties, N. C., and from Adams County, Pa. A small release of Triaspis thoracicus Curt. was made at Statesville, N. C., and a large release at Arendtsville, Pa., in July. No adults of this parasite have issued from bruchid-infested material collected in both release areas. (J. S. Pinckney, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

WHITE-FRINGED BEETLE

The area known to be infested by the white-fringed beetle was greatly enlarged by intensive scouting during 1938. At present the beetle is known to exist in 23 counties in 4 States. The infested counties and States are as follows: Covington, Geneva, Monroe, Conecuh, Wilcox, and Mobile Counties, in Alabama; Escambia, Okaloosa, and Walton Counties, in Florida; Jackson, Harrison, Pearl River, Jones, Smith, Covington, and Hinds Counties, in Mississippi; Orleans, St. Bernard, Jefferson, St. Tammany, Plaquemines, East Baton Rouge, and Jefferson Davis Parishes, in Louisiana. The larger infested areas are around Florala, Ala., and New Orleans, La. In the Florala area a portion of 4 counties lying in 2 States are infested, while in the New Orleans area portions of 4 parishes are infested. The infested areas in the other counties are less extensive. The infestation at Glendale, Walton County, Fla., about 16 miles southeast of Florala, is the farthest east of any known infestation, the northernmost known infestation occurs at Bolton, in Hinds County, Miss., and the most western known infestation at Lake Arthur, in Jefferson Davis Parish, La. This insect is more abundant in the Florala, Ala., area than in any other area; however, the population was great enough elsewhere to cause some damage to garden crops at Laurel, Miss., and Monroeville, La. In the Florala area approximately 1,000 acres of heavily infested land was taken out of cultivation in 1938. The larval population on this retired acreage would have reduced the stand to such an extent that a crop would have been unprofitable. Much of the retired acreage was kept clean of vegetation during the active season of the adult beetle and, as a result, the larval population in the fall of 1938 was much less than it was the year before in these same fields. Notwithstanding the retirement from crops of 1,000 acres of the most heavily infested land, many fields were seriously damaged by larvae. These areas ranged in size from a few square yards to 10 acres. In many instances 3 plantings were made, but it was impossible to obtain a stand. The larvae in these areas kept the ground completely denuded of vegetation until shortly before pupation occurred. The larvae are known to attack practically all field and garden crops

and ornamental plants (over 125 species), and the adults are known to feed on more than 188 species of plants. Garden plantings of Irish potatoes were seriously damaged by the larvae during 1938. The adults emerged in the Florala area from the latter part of May to August 15; however, 87 percent of the total emergence occurred during the 30-day period, June 21-July 20. The adult emergence in heavily infested areas ranged from 50 to 110 per square yard. A survey made in November 1938 showed an average larval population in cultivated fields of 86 per square yard, as compared to 184 per square yard in 1937. Larval populations in excess of 200 per square yard were present in 1938 in a number of fields. The fall has been exceedingly dry and many eggs deposited in August and September had not hatched by December 15.

A new species of Naupactus, which was discovered in southern Mississippi in 1937, is now known to be generally distributed in the vicinity of Gulfport. This species is known to occur in only two Mississippi counties--Harrison and Stone. It caused serious damage to truck and garden crops during 1938 in the Gulfport area. The adults emerged from mid-May to early in October, and 50 or more emerged per square yard in the heavily infested area. Larval populations of 200 or more per square yard are quite common. (H. C. Young, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

CORN EAR WORM

The corn ear worm was in general only moderately abundant during the season and injury was unusually light in the northern part of the country from the New England States westward to the central Great Plains. Field examinations along the Atlantic seaboard indicate a high winter mortality, although survival in cages in New Jersey and Ohio was higher than in 1937, a year of great abundance of the insect. The insect also survived the winter of 1937-38 in cages in Kansas and Utah. Probably the rainy, cool weather prevented rapid reproduction. The warm dry weather in the fall favored development of the insect and heavy infestations were reported from scattered localities. In California the ear worm was abundant and destructive throughout the year.

ARMYWORM

During April serious outbreaks of armyworms were reported from the Gulf States. In Mississippi the damage to cotton was said to have been the worst in 25 years. Heavy damage to oats, alfalfa, and other crops was reported from Louisiana, Alabama, and Texas. These insects also appeared in destructive numbers very early in the season in Oklahoma and damage to wheat and oats necessitated poisoning. During May reports of damage were received from Tennessee and Kentucky eastward to the Eastern Shore of Maryland and Virginia. Moth flights were observed over much of this territory late in March. As the season advanced, damage was reported from the entire Mississippi Valley as far north as Michigan and Minnesota. Along the Atlantic seaboard flights were observed in New York State late in May and damage from the larvae was reported from Pennsylvania northward through New England during June, July, and August. Throughout this area the principal damage was to oats, with serious damage to newly planted grass. In New Hampshire the outbreak was said to be the most serious since 1919. In the Central and Middle Atlantic States a second flight of moths occurred about the middle of August, and throughout this area there was damage during the fall months. Reports

of minor damage were received from Nevada, Utah, and California. Heavy parasitization was observed of much of the infested territory and in Illinois a wilt disease terminated the outbreak in June.

FALL ARMYWORM

During the last week in June fall armyworm was observed attacking corn in Mississippi. The damage increased as the summer advanced and serious damage was reported to corn and grass late in the summer and early in the fall. During the last week in October they were damaging gladiolus. In August and September damage to soybeans and corn in Louisiana and Texas was reported. Along the Atlantic seaboard scattered infestations in a variety of crops were reported during August and September from Georgia, North Carolina, Virginia, and Maryland. Local outbreaks were also reported from Arkansas, Missouri, and Kansas from August to late in October. Other States reporting injury were Indiana, New York, Connecticut, and Maine. In the last-named State there was heavy damage during the latter part of August and the entire month of September in the sections growing sweet corn.

CODLING MOTH

The Middle Atlantic and Middle Western States were characterized by a light apple crop and considerable infestation. A high surviving population in the spring was restrained by unfavorable early summer conditions and control was successful; favorable late-summer conditions allowed increase and injury, ending the season with average or higher infestation. In the Pacific States, especially Washington, high survival, early development and increase, with unusual late injury, were reported. New Jersey and eastern New York reported light early injury and moderate late injury; western New York a condition near normal; Maryland, Ohio, and South Carolina rather high infestation on a light crop. Virginia reported late season increase and injury, as did Kentucky and Michigan. Indiana reported high population and early activity, setbacks from weather in early summer, and increase to normal with favorable late summer conditions. Kansas reported similar conditions. Wisconsin reported unusual infestation, and Minnesota and Mississippi considerable infestation in unsprayed orchards. (F. M. Wadley, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

EASTERN TENT CATERPILLAR

This species was reported as present in considerable numbers in places, but not seriously injurious except locally. Decrease in lower New England, increase in places in the Middle Atlantic and South Atlantic States, and some abundance in upper New England, were noted. Maine, Vermont, and New Hampshire reported abundance in southern localities, while Massachusetts and Connecticut reported a decrease. Delaware, North Carolina, South Carolina, and Ohio, reported increase, and abundance was noted from eastern Maryland and southeastern Virginia. The species was reported as common but not abundant in Arkansas, Florida, New Jersey, and central Maryland and as abundant in places in Mississippi and New York. Hatching periods ranged from February in Florida to March in the Cotton Belt States, April 1 in the District of Columbia, and late in April in Maine and Vermont. (F. M. Wadley, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

The eastern tent caterpillar caused many complaints from residents of Broome and Delaware Counties, N. Y. The wild cherry and apple trees along the rural highways and fence rows, and in pastures were heavily infested. In some parts of New England it was abundant locally. (J. V. Schaffner, Jr., Bureau of Entomology and Plant Quarantine, U. S. D. A.)

ORIENTAL FRUIT MOTH

During 1938, weather conditions appear to have been particularly favorable for the development of the oriental fruit moth in most districts from western Virginia to Connecticut. It is, therefore, not surprising that there has been a marked increase in moth damage to fruit in some sections. This project has observed heavy infestation of midseason peaches in the vicinity of Harrisonburg, Va., and in the Timberville district. Heavy infestation of Elberta peaches and varieties ripening at about the same time has been reported from isolated orchards in northern New Jersey and from Connecticut. There has been a rather distinct correlation between light fruit infestations and heavy parasitization in the districts under observation. Data on observations on fruit infestation in several districts follow. These observations are based on careful sampling, and cutting all fruit samples, and were all made on Elberta or varieties ripening at about the same time.

District			Fruits injured by oriental fruit moth			
	Orchards surveyed	Fruit examined	Total Fruits per tree	Percent Fruit per acre	Calculated fruit per acre	
	Number	Number	Percent	Number	Number	
<u>Maryland:</u>						
Hancock	3	1,100	6.5	17.7	1,982	
Smithburg-Ringgold	3	1,000	3.2	7.8	772	
<u>New Jersey:</u>						
Mercer County	2	800	20.3	113.7	11,439	
Moorestown	8	3,200	15.5	51.8	3,993	
<u>Virginia:</u>						
Clearbrook	3	1,100	16.1	34.0	2,987	
Crozet	3	1,200	2.4	13.2	1,265	
Harrisonburg	2	600	36.9	177.0	13,924	
Staunton	2	700	30.7	39.8	2,425	
Timberville	3	1,100	27.1	105.1	10,763	
<u>West Virginia:</u>						
Martinsburg	3	1,100	16.2	90.6	6,314	
Total	32	11,900	---	---	---	

(H. W. Allen, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

Although oriental fruit moth injury to twigs was observed early in the season in Louisiana no fruit injury was observed later in the season. In Mississippi, however, there was moderate damage in several parts of the State in August. In Tennessee heavy twig infestation was reported from scattered localities in May. Late in that month and early in June the insect appeared to be much more abundant than last year in Kentucky; however, the Elberta peaches were harvested before fruit moth attack. The moths appeared in larger numbers than for several years during the latter part of May in Illinois and Ohio and severe twig injury resulted; however, there was less than the usual extent of fruit injury. In Michigan pupation was well under way during the last week in March and the first 2 weeks in April and the insect proved to be injurious. Along the Atlantic seaboard first pupation was observed about the middle of March in Georgia and late varieties of peaches suffered heavy injury. The commercial crop was not damaged in central Georgia; however, in the northern part of the State there was a 9-percent infestation early in July. In Virginia there was a 20-percent loss of fruit in Frederick and Shenandoah Counties, the heaviest infestation for several years. In West Virginia and Maryland the infestation was generally light, as was also the case in Delaware. In the last-named State parasitization was the heaviest observed in 10 years. Moderately heavy infestations of fruit were reported from New Jersey and there was also considerable injury reported from the eastern part of New York State. In Connecticut the infestation was about twice as heavy as in 1937.

PLUM CURCULIO

This insect did not in general cause severe injury in 1938, but showed some signs of increase in the North and East. An early start, with some setbacks later, was reported from Georgia, Virginia, and Delaware. A second generation injured peaches in central Georgia but was light in northern Georgia. Some second-generation development was reported from Kentucky and southern Virginia, and early development indicated possibility of a second generation in Missouri and Delaware. Increase or considerable injury to apples was noted in Maine, Vermont, Michigan, and Wisconsin; to peaches in New Jersey, Pennsylvania, northeastern West Virginia, and Ohio; and to several fruits in New York. Massachusetts and Tennessee reported the species about normal, Mississippi and Arkansas reported some injury to peaches, and Florida noted less injury than normal. (F. M. Wadley, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

PEACH BORER

The peach borer was reported in its usual abundance over most of the Eastern States. Reports of unusual abundance were received from Connecticut and Virginia. Favorable weather late in the season resulted in an infestation heavier than usual in the Fort Valley section of Georgia.

VEGETABLE WEEVIL

The vegetable weevil has done more damage to truck crops during the past year than ever before. Entire plantings of turnips, carrots, mustard, and cabbage have been destroyed along the Gulf coast from Texas to Georgia. Serious damage was also done to onions, Irish potatoes, and practically all vegetables, with the exception of peas. The insect has spread all over the southern half of Alabama and three-fourths of the way up on the western side of the State. It was

abundant enough in tobacco plant beds in parts of Florida to require control measures. Similar damage to tobacco plant beds and also to early set tomato plants was reported from Georgia. This year the vegetable weevil was reported from Cherokee County, Tex. This is an area where tomatoes are grown extensively and where heretofore this pest was not recorded. In southern California the weevil was reported as damaging cover crops in citrus orchards early in March. Celery was heavily infested late in that month but only scattered reports of serious damage to other garden vegetables were received. Early in May the weevil severely attacked newly set tomato plants.

PEA APHID

The pea aphid caused a great deal of injury to alfalfa in the Middle Atlantic States, Utah, southwestern Idaho, and on the Pacific coast. Some injury was caused to canning peas in the Middle Atlantic States, Wisconsin, and Utah. Early in the season the warm dry weather in the Middle Atlantic States favored rapid reproduction and more damage to alfalfa than usual occurred in Delaware and New Jersey. The insects migrated early to peas and, although the early varieties on the Western Shore of Virginia escaped injury, early peas on the Eastern Shore of that State and in Maryland were damaged. In New York, on Long Island and in central New York the aphid was found on peas during the first half of May, but cool, damp weather following checked development and only light damage occurred. Some damage to peas in the North-Central States was reported. On the West coast, although very early in the season, the weather was favorable and the insect became conspicuous, unfavorable weather in March held it in check and it was April before it got off to a good start. It caused serious injury before the middle of May. In central and southern California the second cutting of alfalfa was damaged instead of the first cutting as usual. Late in fall favorable weather in the Eastern, North Central States, South Dakota, and Utah permitted a heavy increase in populations mostly in alfalfa.

MEXICAN BEAN BEETLE

The Mexican bean beetle passed the winter successfully and began emerging earlier in the spring than usual over most of its range. However, the rather cool, rainy weather in the northern part of its range retarded reproduction and early beans generally were not so seriously injured as in some years. By the first of July injury was being reported generally, and continued to be severe until the end of the season. The insect extended its distribution west of the Mississippi River, having been reported for the first time from Louisiana and Arkansas, where it was injuring beans in the field. It was also discovered in the field in southeastern Missouri, which is the first record of injury in the State. The insect was previously taken at Saint Louis in a Japanese beetle trap in 1936. In central Maine and in New York around Lake Erie where the insect occurs locally, it was found during the season to have spread and also to be causing real injury for the first time. It was reported from Hinds County, Miss., which is the first record for that county and which extends the distribution southwestward in that State. The insect is becoming more abundant and injurious in southern Georgia, and it was found for the first time in Gadsden County, Fla., the second infestation in that State. It was reported from Jefferson County, Fla., in 1933. Some injury was reported from east-central Utah and severe injury from Arizona and Colorado.

TOMATO PINWORM

The tomato pinworm survived the winter of 1937-38 in California in large numbers because of mild weather and continuous growth of tomato vines, but heavy losses to tomatoes did not occur during the season, except in areas of almost continuous tomato growing. A survey of representative tomato fields in southern California showed the following degree of fruit injury: Orange County, 11 percent; San Diego County, 30 percent; San Bernardino County, 3 percent; Los Angeles County, 23 percent; and Ventura County (Santa Rose Valley only), 10 percent. Thirteen tomato fields in the upland, or almost continuous tomato-growing areas of these counties, ranged from 5 percent to 70 percent injury, with an average of 32 percent, while 10 fields from the lowland, or summer-growing areas, ranged from none to 17 percent injury, with an average of 8 percent. Some increase in injury occurred late in the season but the ratio remained about the same. The pinworm has recently been found in the Niland area of Imperial Valley, where midwinter tomatoes are grown. (J. C. Elmore, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

Note.---According to C. A. Thomas, careful examinations of greenhouses and gardens in Pennsylvania in the Chester County and New Castle, Lawrence County, areas during the spring and summer of 1938, failed to disclose a single specimen of the tomato pinworm.

BEEF LEAFHOPPER

In southern Idaho precipitation above normal during April and May 1937 caused a dense stand of Russian-thistle, the summer host plant of the beet leafhopper, to germinate. Abnormally dry summer weather reduced the suitability of dense stands for leafhopper development and early fall populations were the lowest in the last 4 years. Above-normal fall temperature, with sufficient precipitation, permitted adequate fall germination of mustards, the leafhopper's natural fall and winter host plants. Consequently, the beet leafhopper left its holdover host with little delay and entered the winter under favorable conditions. The winter was extremely mild and in general was very favorable for survival. Surveys of the desert areas in April 1938 showed a larger overwintered population of leafhoppers than in any of the 3 preceding years. One of the most unexpected situations occurred during the warm days of April and the early part of May, when a movement of overwintered leafhoppers migrated into the cultivated area. An average of 24.4 leafhoppers per 100 feet of row of beets was recorded for south-central Idaho, and undoubtedly this large movement affected the magnitude of the spring generation in the desert. The initial movement of the spring generation occurred on May 26, which is the average date for the last 13 years, and the peak was reached on June 17. The premature drying of annual spring-breeding wild host plants, in the Sailor Creek sagebrush section, lying south of the Snake River and west of the Salmon Falls Creek, together with the area west and northwest of the Jerome cultivated tract, was very important in reducing the abundance of the spring generation of leafhoppers. The number of leafhoppers in the spring movement in 1938 was approximately two-thirds as large as in 1935, four times as large as in 1936, and one-third as large as in 1937. In a small number of fields, where beets followed beets and where a few 1937 volunteer beets were still growing, the overwintered beet leafhopper that entered the fields early in the season transmitted the curly top disease from the volunteer to the seedling beets during their most susceptible stage, which resulted in reduction of yields, ranging from 25 to

40 percent. Other fields were infested early in the season with a comparatively high population of overwintered leafhoppers, resulting in a high percentage of plants in such fields being infected by the curly-top disease. Surveys of commercial bean fields in July showed that curly-top injury to beans was very light, ranging from 0 to 13.5 percent in garden varieties and from 0 to 5.5 percent in the Great Northern, a dry-bean variety. Fall populations of the beet leafhopper in southern Idaho in 1938 were the lowest recorded in the last 5 years. Fall germination of the fall and winter weed host of the beet leafhopper was widespread by the end of October. Weather conditions up to the end of January 1939 have been favorable for survival. Overwintered beet leafhoppers were found in the Billings, Mont., area early in May, confirming the findings in 1936 and clearly showing that this insect can survive certain types of winters in Montana. In this area the most severe outbreak of curly-top since 1935 occurred.

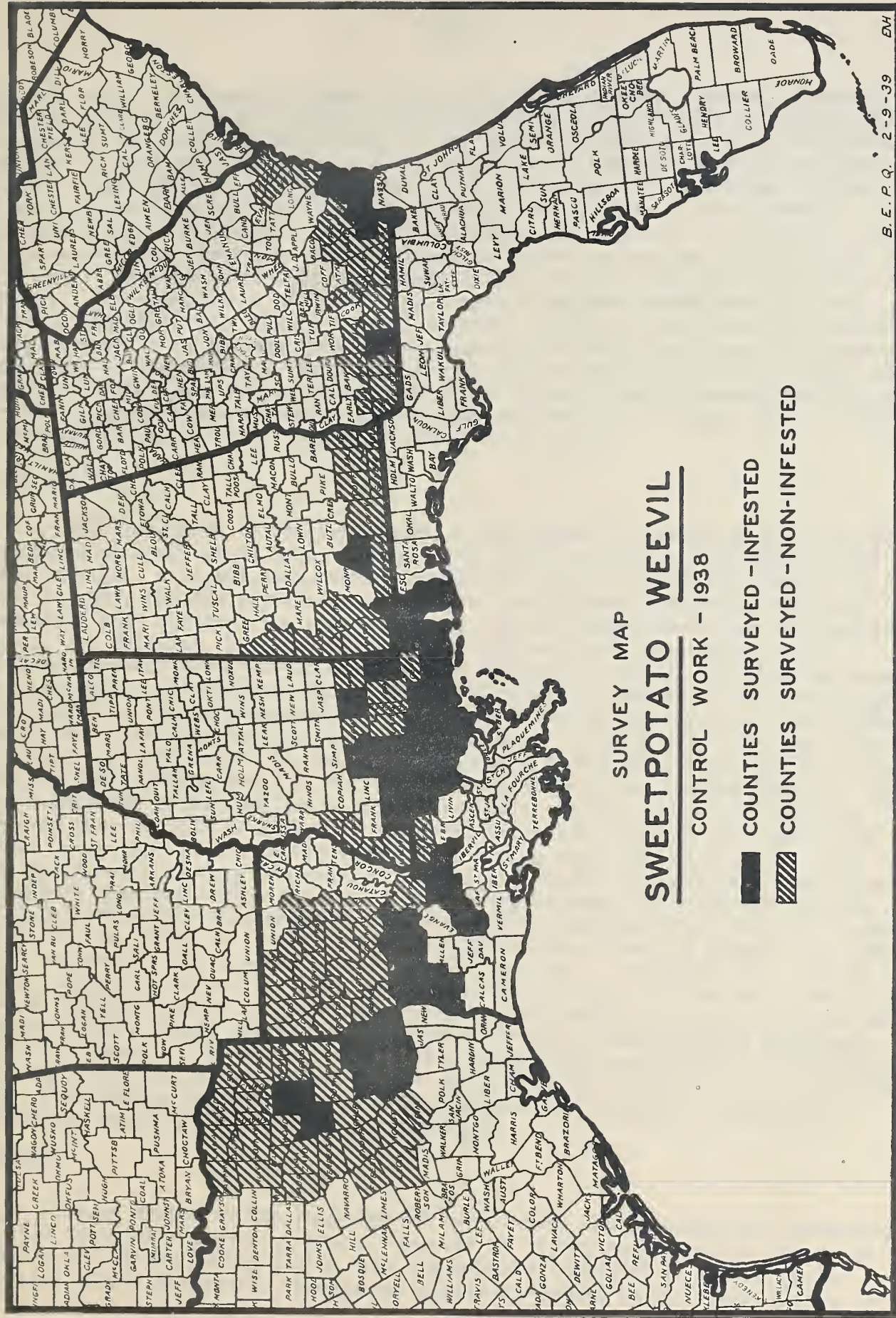
A survey of the Yakima Valley, Washington, beet-producing area was made during the first half of June. The beet leafhopper populations varied from an average of 28.5 adults per beet at Prosser to 1.16 at Haybom. Evidently an early movement of overwintered beet leafhoppers moved into the cultivated area, which accounts for the large nymphs present in the fields. The mild winter was favorable for survival of the small plants not harvested, and these "volunteer" plants were reservoirs of the virus and account for the severe cases of curly top in a few fields. (J. R. Douglass, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SWEETPOTATO WEEVIL

Surveys for sweetpotato weevil infestations were carried on in 1938 in Alabama, Georgia, Mississippi, and Texas, cooperatively with the pest-control officials of these States. Areas in which the production of sweetpotatoes is undertaken on a commercial scale and in which the infestations are more or less isolated, represent the field in which cooperative activities are conducted. To attempt eradication in the heavily infested areas along the Gulf coast would prove futile under present conditions, it is believed, owing to the prolific growth of wild host plants on the coast and nearby islands. Survey work is of two types: Spotted survey, where no infestation of the weevil is definitely known to exist; and intensive or house-to-house inspection in localities where weevils are found, covering a radius of 5 miles of each infested property. A summary of such work in the calendar year 1938 is as follows: Alabama--counties surveyed, 12, counties found infested, Baldwin, Mobile; Georgia--counties surveyed, 72, counties found infested, Camden, Glynn, Thomas; Mississippi--counties surveyed, 20, counties found infested, Amite, Green, Harrison, Jackson, Jeff Davis, Jones, Lawrence, Marion, Pearl River, Pike, Stone, Walthall; Texas--counties surveyed, 13, counties found infested, Angelina, Cherokee, Gregg, Nacogdoches, Sabine, San Augustine, Shelby. The accompanying map shows these counties. (R. A. Sheals, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

TOBACCO MOTH

In August and September, 1938, the first serious outbreak of the tobacco moth occurred on tobacco farms in North Carolina and Virginia. The first infestations in bulk of cured tobacco in growers' pack houses were observed the latter part of August and a survey conducted in September showed that heavy infestations were present over a wide area in Rockingham, Forsyth, and Durham Counties, N. C., and in Pittsylvania County, Va. Light infestations were found



also in Guilford, Caswell, Person, Granville, Wake, Chatham, Orange, Johnston, Wilson, Pitt, and Lenoir Counties, N. C. Prior to 1938 the pest was practically unknown on the farms in this country. The losses by tobacco growers were principally as follows: (1) Leaves badly damaged by larvae in the bulks and discarded during stripping and grading; (2) a greater quantity of scrap tobacco resulting from grading; and (3) loss in weight and quality of the infested tobacco sold. The degree of damage on individual farms ranged from slight injury to leaves of the first and second curings to losses as high as $33\frac{1}{3}$ percent of the crop. The season of 1938 was generally favorable for the development of the insect. The populations of moths were larger in storage warehouses of cured tobacco than in 1937. Due to unusual climatic conditions the flue-cured tobacco crop matured about 30 days earlier than normal, which brought about a corresponding early curing season. The abundant moth populations and the long storage period in the growers' pack houses brought about by the early curing season are believed to be important factors causing the serious outbreak on the farms. (W. D. Reed, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BOLL WEEVIL

The loss caused by the boll weevil, which began a downward trend in 1933, continued downward until 1936, increased slightly in 1937, and increased still more in 1938. A higher-than-average number of weevils entered hibernation in the fall of 1937, but the percentage of survival in 1938 was much lower than the unusually high survival the previous year. In the hibernation cages at Florence, S. C., and Tallulah, La., the survival in 1938 was about one-tenth, and at College Station, Tex., it was one-fourth as great as in 1937. Despite the lower percentage of survival, the larger number of weevils entering hibernation caused the weevils to be more numerous in the fields early in the spring in most parts of the Cotton Belt than for the past several years. In the States along the Atlantic seaboard the 1938 weevil damage was greater than it has been for a number of years and was particularly heavy in the sea-island cotton in Georgia and Florida. In the middle and Delta sections of the Cotton Belt the damage was considerably greater than in 1936 or 1937, but was still below average. Weather conditions in these areas were favorable for development during the early season but a hot, dry spell early in July temporarily checked the weevils and permitted early cotton to mature with but slight damage. Late cotton, however, was severely damaged. At Tallulah, where the increase in yields obtained by dusting over a period of years is used as an index of weevil damage, the average gain was 9.6 percent, or about half as great as the 10-year average of 19.3 percent. In eastern and southern Texas, where the damage has been much higher than average for the last 2 years, the damage in 1938 dropped to below normal in southern Texas and to about normal in eastern Texas. Early frosts and defoliation by leaf worms (Alabama argillacea (Hbn.)) reduced the number of weevils that entered hibernation this fall to about the usual numbers, except in the States along the Atlantic seaboard, where probably more than average numbers went into hibernation. (U. C. Loftin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BOLLWORM

Damage caused by the bollworm was more severe and occurred more generally in 1938 than for a number of years. Reports of injury were received from practically all of the Cotton States from the Atlantic seaboard to the irrigated sections of the Southwest. Damage was especially heavy in the river bottoms of

Texas. In many sections the damage was caused by a comparatively light infestation that extended over most of the period of crop development, instead of the usual distinct peaks of infestation. (U. C. Loftin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

COTTON LEAF WORM

The first appearance of the cotton leaf worm in the United States in 1938 was reported from Calhoun County, Tex., on May 2, the earliest record since 1922. Spread was fairly rapid and occurrences in other areas were reported as follows: Hidalgo County, Tex., June 10; College Station, Tex., June 18; Presidio, Tex., July 7; Tallulah, La., July 16; Garvin County, Okla., July 16; Columbia, Ark., July 16; Holmes County, Miss., July 16; Tucson, Ariz., July 28; McIntosh County, Ga., July 29; Madison, Fayette, Dyer, Gibson, Lauderdale, and Shelby Counties, Tenn., August 19; and Florence, S. C., August 27. During the latter part of September migration was general and moths were reported from Ohio, Pennsylvania, Indiana, New York, Massachusetts, Vermont, and New Hampshire. Notwithstanding the early appearance and widespread distribution, the population did not increase as rapidly as expected and little damage was caused to early cotton. Considerable poisoning was necessary to protect late cotton west of the Mississippi River, but little poisoning was needed east of the river. (U. C. Loftin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

COTTON FLEA HOPPER

Hibernation studies at Port Lavaca, Tex., showed a normal emergence of flea hoppers from overwintering eggs during the spring months. The emergence from 3,800 plants during 1937 was 44,951, as compared to 44,927 nymphs in 1938. The peak of the emergence this year was on April 28, or 29 days later than in 1937. From April 26 to May 3, 80.8 percent of the year's emergence took place. The infestation on cotton in southern Texas was much higher in 1938 than in 1937, but not higher than the average for the previous 4 years. The damage was severe in many localities where control measures were not applied. In Texas control measures for the flea hopper were used rather widely and to good advantage. Dusting at Port Lavaca showed an average gain of 312 pounds of seed cotton and a net profit of \$9.65 per acre. The only other section from which reports of heavy damage were received was north-central Georgia. (U. C. Loftin, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

PERIODICAL CICADA

A few old, doubtful records were used to make up Brood XII of the periodical cicada, which is scheduled to appear in 1938. C. L. Marlatt, (U. S. Dept. Agr., Bur. Ent. Bull. 71, 1907) refers to the brood as very doubtful. In 1904 no data were received to confirm the old records; however, the brood was extended by records of the appearance of the cicada in Mount Olivet Cemetery in Baltimore, Md., and at Catoctin Mountain near Braddock, Md. In 1921, the next year for the appearance of the brood and also the year of the inauguration of the Insect Pest Survey, J. A. Hyslop made an effort to procure reports from all localities from which records were ever made. He received negative reports from all localities. In 1938, Mr. Hyslop again asked the collaborators of the Insect Pest Survey to look for the insect. All reports were negative, except from West Virginia, where F. W. Craig reported the occurrence of the insect in Cabell County, the county

from which it was reported originally in 1887. Mr. Craig also observed it in three adjoining counties--Mason, Putnam, and Lincoln. J. J. Davis reported that the insect was heard at Orleans, Orange County, Ind., on May 26, 1938. This is a new record for this brood. P. Knight made a thorough search in Maryland in the two places where the records were made in 1904, but saw no signs of the insect.

SMALLER EUROPEAN ELM BARK BEETLE

Distribution records obtained in 1938 have somewhat enlarged the known range of Scolytus multistriatus Marsh. These additional records show the species to be well distributed on both sides of the Ohio River where this river forms the boundary between northern Kentucky and the adjoining portions of Indiana and Ohio. Other findings for the first time disclosed the presence of the beetle in the Brunswick, Md., and Cumberland, Md.--Wiley Ford, W. Va., areas. These areas are considered as outlying areas of Dutch elm disease infection. The finding of this beetle at Hagerstown and in other localities in Washington County, Md., and at Scottdale, Westmoreland County, Pa., tends to connect areas previously known to be infested. (C. W. Collins, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

EASTERN SPRUCE BEETLE

The epidemic of the eastern spruce beetle in the Green Mountains of Vermont is subsiding. A survey late in the summer of 1938 showed that the number of infested spruce was considerably less than in 1936 and 1937. In the Waterville Valley section of the White Mountain National Forest, in New Hampshire, a very light endemic infestation was found in overmature spruce stands. (R. C. Brown, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SOUTHERN PINE BEETLE

The severe outbreak of the southern pine beetle in loblolly pine in southeastern Virginia and northeastern North Carolina was found to have subsided in the fall of 1938, in all areas examined. Smaller outbreaks were recorded near Wilmington, N. C., and in the Great Smoky Mountains National Park, Tenn., in pitch and shortleaf pine during the summer of 1938. (B. H. Wilford, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BLACK HILLS BEETLE

In the central Rocky Mountain region Dendroctonus ponderosae Hopk. has continued in epidemic form. In Colorado, in an area extending along the eastern range of the Rockies from the central to the northern part of the State, fall surveys indicated that 24,000 ponderosa pines were infested during the current flight of this beetle. This reduction of 20,000 trees from last year is due largely to control work. No radical changes have been noted in the Wyoming infestations (210,000 trees in 1937) in limber pine and lodgepole pine, except on the Medicine Bow National Forest where control work reduced the infestation from 12,000 trees last year to 1,200 this year. In parts of southern Utah the infestation has maintained epidemic proportions, notwithstanding control work. (J. A. Beal, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

ROUNDHEADED PINE BEETLE

In northern New Mexico Dendroctonus convexifrons Hopk. increased greatly during the recent drought years and killed large numbers of pole-size and mature ponderosa pine trees. On the Santa Fe National Forest alone over 50,000 trees were treated in 1937. The large amount of control work, together with improved growing conditions for the trees in 1938 appeared to check the epidemic. (J. A. Beal, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

MOUNTAIN PINE BEETLE

In northern Idaho and western Montana this insect became more generally destructive in stands of western white pine in 1938, especially on the Clearwater and Kootenai National Forests. Losses are still occurring in a few areas of lodgepole pine in the northern Rocky Mountains, and in white bark pine stands in and adjacent to Yellowstone National Park, although the widespread epidemic of a few years ago in lodgepole has generally subsided. In Mount Rainier National Park, in Washington, the beetle was found in epidemic numbers, and killed many large groups of western white pine. In California one area on the Tahoe National Forest, in the central part of the State, showed a marked increase of the beetle in sugar pine, and there was also an increase in the lodgepole pine infestations in Yosemite National Park. One infestation, however, reported in 1937 near Camp Nelson, in Sequoia National Park, died down in 1938. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

WESTERN PINE BEETLE

In Oregon and Washington Dendroctonus brevicornis Lec. was more aggressive in 1938 than in the previous 2 years. Intensive surveys covering 88,560 acres of sample plots indicated that losses would exceed 500,000,000 board feet of commercial pine timber. In California this season, infestations were on the increase for the first time since 1934. While this increase is general throughout the ponderosa pine type, it is more pronounced in the eastside type of northeastern California. This build-up is rather striking because it has followed two seasons of heavy precipitation, which have resulted in improved conditions for tree growth. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

DOUGLAS FIR BEETLE

Destruction of Douglas fir continued to be severe in many areas throughout the entire Rocky Mountain region. In parts of central Colorado, southern Utah, and northern New Mexico it is believed that from 50 to 70 percent of the Douglas fir stands have been wiped out, although no accurate surveys of losses have been made. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

ELM LEAF BEETLE

Infestations were heavy in many localities through New England and New York in 1938, causing severe injury to the elm trees, particularly in the residential districts. Specific areas where outbreaks are known to have occurred in 1938 include the townships of Augusta and China, in Kennebec County, Maine,

and south through Merrimac and Rockingham Counties, N. H., Essex, Middlesex, and Norfolk Counties, Mass., New Haven County, Conn., Rutland County, Vt., and some localities in Columbia, Monroe, and Sullivan Counties, N. Y. (J. V. Schaffner, Jr., Bureau of Entomology and Plant Quarantine, U. S. D. A.)

A LEAF BEETLE

A leaf beetle, Chrysomela tremulae F., was reported to be causing heavy defoliation of aspen over extensive areas in the Allegheny National Forest, in northwestern Pennsylvania. In northern Minnesota, on parts of the Superior National Forest, small groups of aspen in one district were completely defoliated. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BAGWORM

Numerous inquiries during the summer of 1938 indicated that the bagworm was more prevalent than usual on ornamental evergreens from New York City to Ohio and western Kentucky and south to Georgia and South Carolina. Several inquiries also came from Texas. In the Carolinas and Tennessee heavy defoliation and some permanent injury to ornamentals was recorded. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

GYPSY MOTH

The hatch of egg clusters of the gypsy moth in the spring of 1938 was not as pronounced as in 1937. Egg clusters collected over a more or less extended area showed some of the clusters as total nonhatch. The average hatch, however, was about 63 percent. The spring mortality of the young larvae was high in 1938. The defoliation during the summer of 1938 was much less extensive than was recorded for the same territory in 1937, being but slightly more than half of that recorded for the previous summer. In Maine, the total area of defoliation was somewhat less than in 1937, although in three of the counties there was a substantial increase in the areas affected, over that recorded in 1937. In New Hampshire the areas of defoliation were much less extensive, the total acreage being about half of that recorded in 1937. In Massachusetts, as in New Hampshire, the total area of defoliation was only about 50 percent of that recorded for the year 1937. In Barnstable County, however, there was a considerable increase, and a moderate increase in Essex County. In Franklin, Hampshire, and Hampden Counties the total defoliation in the towns east of the Connecticut River was somewhat less than that recorded in 1937; however, in towns west of the river the area of defoliation increased considerably. In Rhode Island there was an increase in the area of defoliation over that recorded in 1937, while in Vermont and Connecticut the area of defoliation increased markedly over that recorded in 1937. (A. F. Burgess, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BROWN-TAIL MOTH

During the summer of 1938 there were not many reports of defoliation by this insect, although in Maine there were a number of towns where a considerable defoliation was noted, and in one town in Cumberland County an area of almost solid oak growth was completely defoliated. In New Hampshire and Massachusetts very

little defoliation was noted; in Barnstable and Plymouth Counties, Mass., the infestation was heavy in some localities. The wholesale cutting of webs over the entire infested area in 1935-36 and in 1936-37 reduced the infestation considerably. Since this work was abandoned the infestation has increased rapidly in some localities. (A. F. Burgess, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SATIN MOTH

In general, the infestation throughout the infested area remains light, and most of the defoliation noted was confined to a few poplar trees. In Maine noticeable feeding was noted in only 2 towns. In 1 town in Cumberland County about 150 poplar trees were completely defoliated. In New Hampshire noticeable feeding was noted in 6 towns, in 1 town in Carroll County about 1-1/2 acres of poplar growth were completely defoliated. In Vermont only a few trees, which were partially defoliated, were noted. In Massachusetts some defoliation was noted in 21 towns. (A. F. Burgess, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

Local outbreaks of the satin moth occurred in the vicinity of Plymouth and Lebanon, N. H., and in Hartford, Vt., in 1938. (J. V. Schaffner, Jr., Bureau of Entomology and Plant Quarantine, U. S. D. A.)

FOREST TENT CATERPILLAR

Observations in Vermont indicated that, in general, the infestations in Addison and Bennington Counties during the past summer were much less severe than in 1937, while in some parts of Windsor and Orange Counties severe defoliation was more apparent in 1938. Many sugar-maple orchards show the effects of severe defoliation in the last 1 to 4 years. In western Massachusetts and northwestern Connecticut some rather heavy, local infestations were noted. It was also serious in parts of New York, particularly in Sullivan, Greene, Delaware, and Broome Counties. In southeastern South Carolina the defoliation of hardwoods, especially tupelo gum, was extremely severe, and this was of primary importance to beekeepers of the vicinity who depend on certain of these trees as a source of honey. In northeastern Michigan heavy defoliation was reported on an area covering several thousand acres. In northern Minnesota, however, where a very widespread epidemic has been in progress for several years, there was a tremendous mortality to the insect in 1938, owing to adverse weather conditions early in the season and to heavy parasitization. Egg counts in September indicated a low degree of infestation in this region. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SPRUCE BUDWORM

In northern Minnesota the form that attacks jack pine increased in abundance and caused rather severe and widespread defoliation, although good growing conditions apparently prevented any tree mortality. In Colorado the form infesting ponderosa pine continued in an increasing epidemic status in the central part of the State and was found to occur also in other parts of the Central Rocky Mountain region. In this same region the form attacking Douglas fir and white fir showed an increase in 1938, but was not abundant enough to cause the death of infested trees. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

HEMLOCK LOOPER

The severe and widespread outbreak of Ellopia fiscellaria lugubrosa Hulst. that appeared in the fir stands of northern Idaho and western Montana in 1937 continued during 1938, although in some of the most heavily defoliated areas there was a decrease in the amount of feeding this season. Many tree species besides the preferred true firs were attacked, and in some areas the upper limits of white pine stands were severely injured. Near Darrington, Wash., adults were noted in flight in unusual numbers, but no defoliation was observed. The last outbreak in this locality in Washington occurred about 10 years ago. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

DOUGLAS FIR TUSsock MoTH

The outbreak that has been present in the Sawtooth National Forest, Idaho, for the last 2 years continued at approximately the same severity in 1938. Working in association with this insect is a looper identified as Nepytia canosaria Walk. var., and these two insects have caused a complete destruction of all Douglas fir in the defoliated area. In the Blue Mountains of Oregon the tussock moth extensively defoliated white fir and Douglas fir, and as a result some of the timber will die. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

LARCH SAWFLY

In the northern part of the Lake States the larch sawfly appears to be on the increase, although it is not abundant. In northern Montana the outbreak occurring on the north fork of the Flathead River during the last several years continued at about the same severity as in 1937, without doing serious damage. A new infested area was reported on the middle fork of the Flathead River, in Glacier National Park, but the sawfly is not in epidemic form in this area. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

TWO LARCH SAWFLIES

The two larch sawflies, Platycampus laricis Roh. and Midd., and P. larivorus Roh. and Midd., were reported in northern Idaho some 20 miles north of Coeur d'Alene. This is the first outbreak of these two species that has been recorded since their first known appearance in 1921. (J. C. Evenden, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

EUROPEAN SPRUCE SAWFLY

Surveys of spruce areas, in cooperation with the States of New Hampshire, New York, and Vermont, in 1938 showed that this insect was present in at least small numbers wherever spruce was examined. In New Hampshire very heavy infestations occur on Mt. Monadnock, and on Pack Monadnock and Temple Mountains near the Peterboro-Temple town line, also a medium-to-heavy infestation occurs near Mt. Kent, in the town of Pittsburgh, in the northern part of the State. In Vermont the infestation is very heavy in the towns of Wilmington and Marlboro, in the southern part of the State, medium to heavy on Green Peak, in Dorset Township,

located in the southwestern part of the State, and on Mt. Ellen, Mt. Abraham, and Mt. Battell, in the central part of the State. In Lincoln, Vt., where the infestation was heavy in 1937, it now seems to be somewhat reduced. In New York a number of medium-to-heavy infestations were found in plantations of Norway spruce in Columbia, Dutchess, Ulster, Otsego, and Chenango Counties. Although no defoliation was noticeable in the Adirondacks, this insect was quite numerous there in some of the older stands of spruce. In Maine, reports from State Entomologist Peirson indicate that there has been an increase in the intensity of the infestation in the northern part of the State and in about 4 townships in Washington County. Between 5 and 6 million parasites, Microplectron fuscipennis Zett., reared in the forest-insect laboratory of this Bureau at New Haven, Conn., during the spring and early part of the summer were colonized in spruce sawfly infestations in Maine, New Hampshire, Vermont, and New York. Larger numbers of this parasite were reared and liberated in portions of Maine by officials of that State. (R. C. Brown, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

AN INTRODUCED SAWFLY ON PINE

Acantholyda erythrocephala L. is an introduced sawfly that feeds on the foliage of pine. It is widely distributed in Europe and is recorded from Chosen and Japan. It was first taken in the United States at Chestnut Hill, Pa., in 1925, and 13 years later it was found attacking white pine in Morristown and Somerville, N. J. Further records obtained in 1937 and 1938 have shown that the species is widely distributed throughout the northern half of New Jersey and that it occurs in Rockland and Orange Counties, N. Y., and in Monroe, Northampton, and Bucks Counties, Pa. The insect has been found to attack red, white, mugho, Swiss Mountain, Scotch, Japanese red, and Austrian pine in the United States. Red and white pine appear to be the most favored and Austrian pine the least. Although reported as attacking Larix, Picea, and Abies in Europe, this sawfly has not yet been found to do so in the United States, despite the close proximity of trees of these genera to a heavily infested area. (C. W. Collins, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

A PINE SAWFLY

Infestations of Neodiprion sertifer Geoff., a European sawfly, apparently are increasing in intensity in New Jersey. Severe defoliation occurred in plantations of red pine, and on small groups of Japanese red, Scotch, jack, and mugho pine in Somerset County, whereas white pine and Austrian pine were fed upon rather sparingly, even when growing in close proximity to the heavily infested species. In New Jersey infestations are known to occur in Hunterdon, Mercer, Middlesex, Morris, Somerset, and Union Counties, and, although considerable scouting was done in 1938, the species was not found outside of these counties. J. S. Houser reported this species as a serious pest of Scotch pine in Ohio in 1938. There is also a record of this sawfly from Grayling, Mich., based on larval identification. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SAWFLY ON RED PINE

Although the sawfly Neodiprion sp. on red pine did not cause as much defoliation in Massachusetts in 1938 as was anticipated early in the season, it still continues as a serious menace to red pine stands in New England. In Massachusetts many plantations of red pine on State forests, parks, State and municipal water-

sheds, and on private property were sprayed to prevent serious defoliation. Heavy infestations where serious defoliation occurred were observed in Essex, Middlesex, and Worcester Counties, Mass., and at Pittsford, in Rutland County, Vt.; also a medium infestation at Keene, in Cheshire County, N. H. (J. V. Schaffner, Jr., Bureau of Entomology and Plant Quarantine, U. S. D. A.)

BOXELDER LEAF ROLLER

A severe epidemic of what apparently is the boxelder leaf roller (Gracilaria sp., probably G. negundella Chamb. --- based on larval determinations) occurred throughout the southern portion of Idaho, where practically every boxelder was severely infested. Associated with this insect in many instances was a large noctuid that has been determined as Acronicta americana Harr. (J. C. Evenden, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

A NEW PINE NEEDLE MINER

A new needle miner, Recurvaria sp., was found attacking pinon pine east of Mono Lake, Calif. An area of about 10,000 acres was suffering from an epidemic infestation that had already caused death of the stand over about 3,000 acres. This infestation has attacked a pinon forest which for many years has been used by the Mono Indians for gathering pine nuts. (J. M. Miller, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

EUROPEAN PINE SHOOT MOTH

The infestations of the European pine shoot moth continue heavy in Westchester County and on Long Island, N. Y., and in the southwestern part of Connecticut, particularly on red and Scotch pine. Many red pine trees in plantations and in small ornamental groupings are in a very poor condition. (J. V. Schaffner, Jr., Bureau of Entomology and Plant Quarantine, U. S. D. A.)

NANTUCKET PINE SHOOT MOTH

The Nantucket pine tip moth was reported killing many of the new growth shoots on pine in plantations in parts of Kentucky, Tennessee, and Mississippi. It was also reported infesting pine adjacent to the Forest Service nursery near Licking, Mo. (L. G. Baumhofer, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

WHITE GRUBS

White grubs (Phyllophaga spp.) caused heavy losses of seedlings in several forest nurseries in 1938. The Forest Service nurseries on the Nicolet National Forest, Wis., and Chippewa National Forest, Minn., had serious grub problems. Also on the Chippewa Forest one pine plantation of about 60 acres, established in 1937, suffered a mortality of about 80 percent, owing to grubs. The State nurseries in South Carolina had about two-thirds of the seedlings destroyed in some sections, and greater grub damage was prevented by chemical control measure. An outbreak of white grubs in the State nursery at Albany, Ga., was controlled by the use of carbon disulphide. (Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

SEED CORN MAGGOT

An infestation in the red cedar seedbeds of the Bureau of Agricultural Economics nursery near Lebanon, Tenn., caused some loss of young seedlings and considerable concern early in the spring of 1938. Root damage, by what was later found to be this insect, was first investigated in this nursery late in the spring of 1937; after the insects had disappeared from the beds. (B. H. Wilford, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

A CECIDOMYIID INJURING RHODODENDRONS

In Rhode Island some nurserymen grow rhododendrons from seed and when the plants are 3 years old known varieties are grafted on to their roots. These plants are forced in coldframes and nursery beds and usually put on two or three sets of new sprouts and leaves each year. Beginning with the second set of tender leaves late in June or early in July, a great amount of injury was caused by the larvae of an unidentified cecidomyiid. The tender leaves turn black and dry up or are badly deformed, and there is considerable retardation of growth. There is an overlapping of generations of the insect during the summer, and apparently it is hibernating as a full-grown larva in the soil. (J. V. Schaffner, Jr., Bureau of Entomology and Plant Quarantine, U. S. D. A.)

MATSUCOCCLUS SCALE

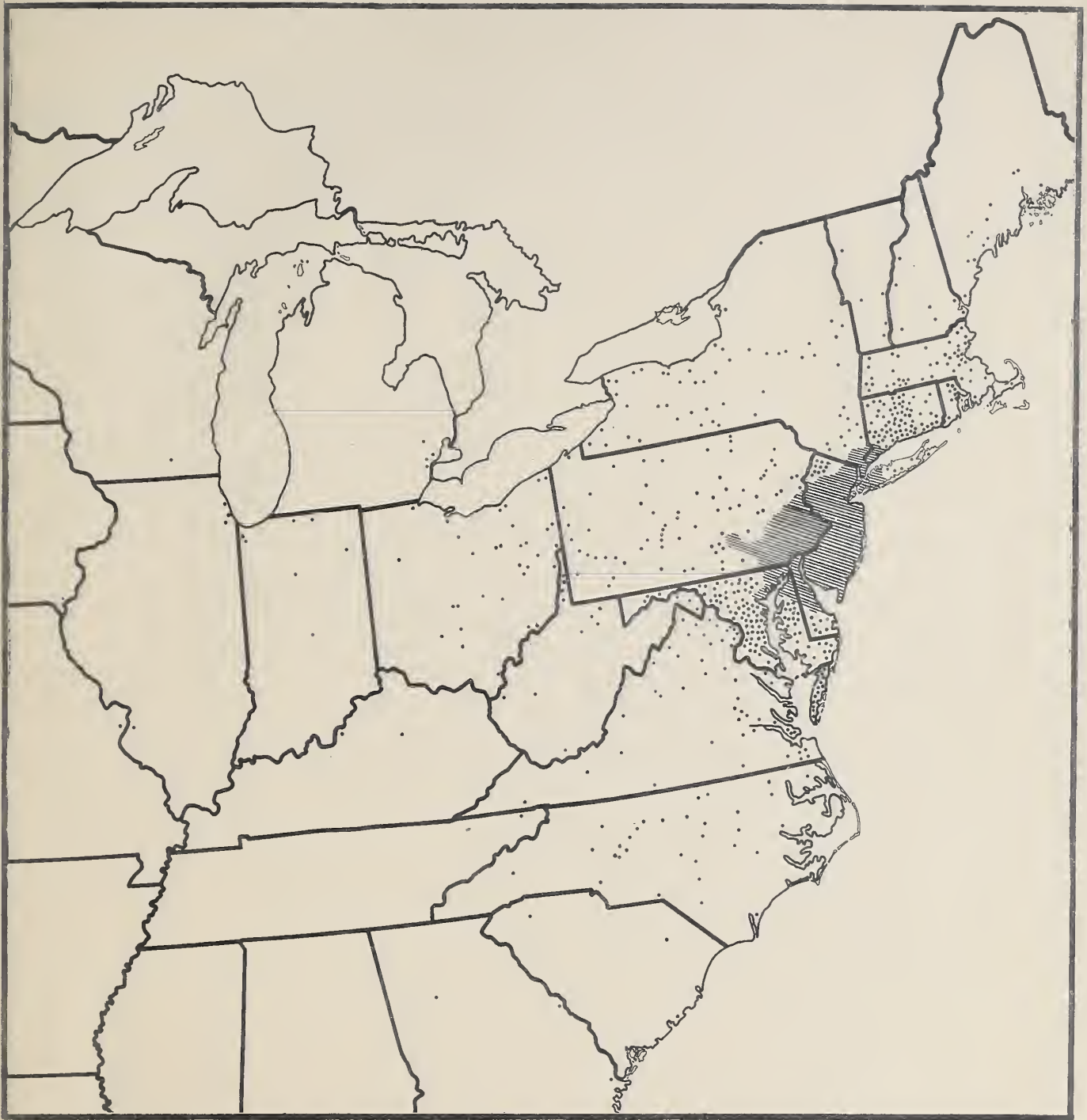
Observations during the last 2 years (1937-38) on Matsucoccus sp. on pitch pine in the Northeastern States indicate that populations of the insect have increased in the areas inspected. Analyses of data from pitch pine plots in Pennsylvania show that large numbers of twigs and leaders, and in some instances whole trees, have been killed by the insect. (R. C. Brown, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

EUROPEAN EARWIG



Records of 1938 show that Forficula auricularia L. is becoming widely dispersed in southern New England. First found in Newport, R. I., many years ago, it is now known to occur in Fall River, New Bedford, and Taunton, Mass., and in Connecticut it was recently found at New Haven by W. E. Britton. (R. C. Brown, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

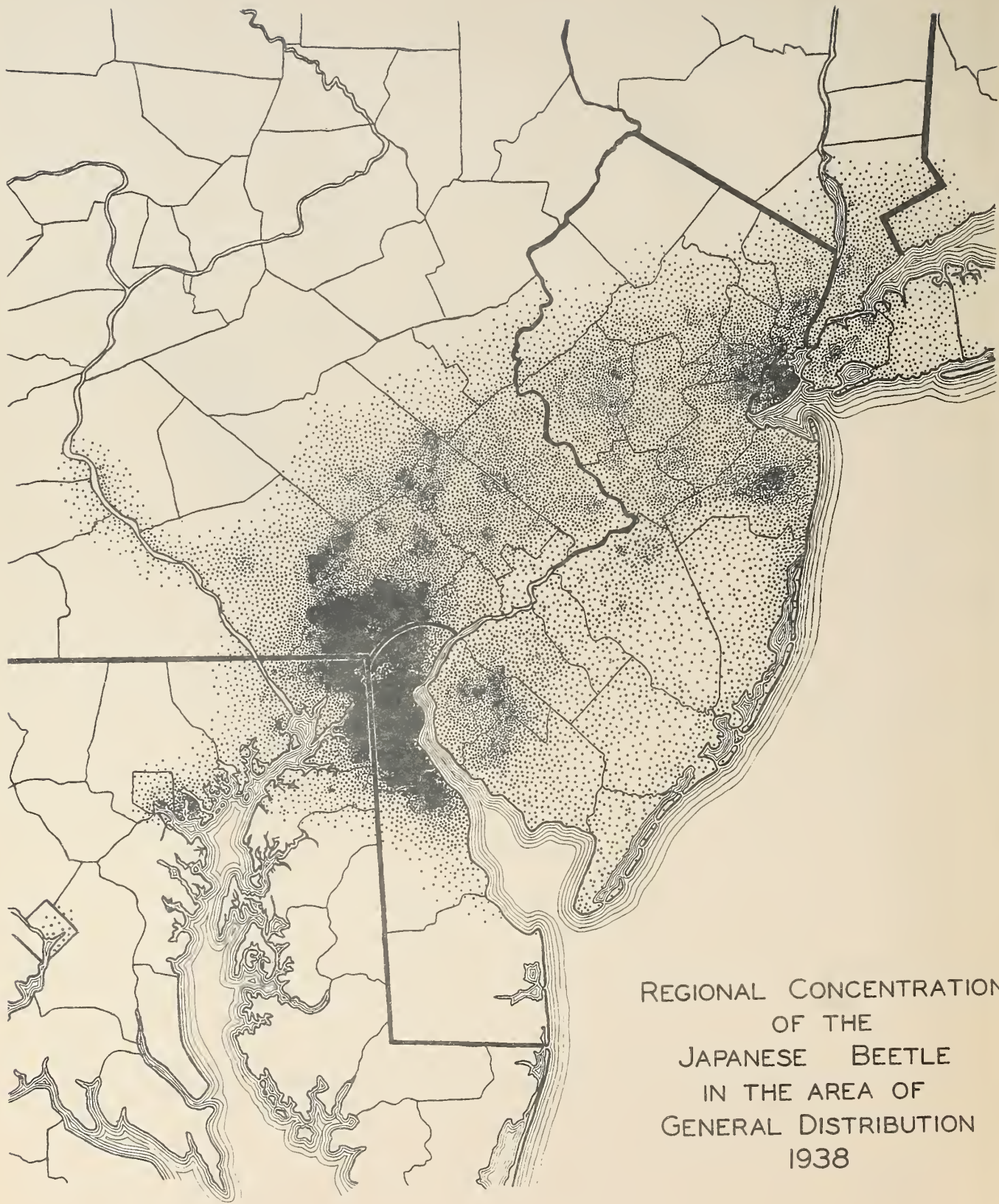
JAPANESE BEETLE

The winter of 1937-38 was one of the mildest in years throughout the present area of general distribution of the Japanese beetle. As a result, so far as could be determined, there was no appreciable winter mortality of the overwintering stage of the beetle. In the spring of 1938 an unusually warm early period was followed by a cooler period in May and June, as a result of which the rapid early season larval development was slowed down to such an extent that general emergence of adult beetles was somewhat later than normal. Weather conditions during July and early in August were exceedingly favorable for the adult stage of the beetle; the succession of cloudy days with frequent rains prolonged the normal summer life period of the beetle population so that the natural drop in population, owing to the dying off of the beetles, which customarily becomes appreciable early in August, was delayed for approximately 2 weeks. For the same reason, the normal beetle-feeding period was correspondingly prolonged. On the



POINTS AT WHICH JAPANESE BEETLES
HAVE BEEN RECOVERED.

-  AREA CONTINUOUSLY INFESTED BY NATURAL SPREAD.
-  LOCALIZED COLONIES OR POINTS OF MINOR OCCURRENCE.



REGIONAL CONCENTRATION
OF THE
JAPANESE BEETLE
IN THE AREA OF
GENERAL DISTRIBUTION
1938

other hand, there is some evidence that the unusual prolonged heavy precipitation during the latter part of July resulted in the partial destruction of early laid eggs, as well as interrupting and prolonging the oviposition period. As a result, early fall larval development was somewhat delayed, but the mild late fall permitted larval development to progress so that at the time of entrance of larvae into hibernation, larval development was about normal.

At the close of the 1938 beetle season, the area of general distribution was estimated to cover approximately 15,117 square miles, an increase of 1,266 square miles over that of the previous year. This area was distributed among the various States as follows: Delaware, 1,043 square miles; Maryland, 1,157; Pennsylvania, 4,534; New Jersey, 7,227; New York, 993; and Connecticut, 163. The following points roughly define the limits of the area of general distribution: Lewes and Milford, Del.; Barclay and Baltimore, Md.; Delta, Harrisburg, Manheim, Hamburg, and Portland, Pa.; Andover and Pompton, N. J.; Suffern and Peekskill, N. Y.; and Ridgefield and Westport, Conn. The area of isolated colonies includes the States of Georgia, South Carolina, North Carolina, West Virginia, Ohio, Indiana, Illinois, Michigan, and the States to the east thereof. In this area the colonies or points of infestation are for the most part of a minor character, quite localized, and widely separated. The areas of general distribution and of isolated colonies are shown on the accompanying map.

As in previous years, the regional concentration of beetles varied throughout the area of general distribution, as shown by the accompanying map. The infestation was heaviest, and decidedly heavier than in 1937, throughout the greater part of this area lying in Delaware and Maryland and in Chester and Delaware Counties in southeastern Pennsylvania. Within this area, one fairly continuous tract, estimated at 900 square miles, was generally characterized by an exceptional extent of severe foliage injury. The outstanding feature of this tract was the unusually high percentage of apple orchards approaching complete defoliation, while injury to shade trees, such as elms, planes, and oaks, was much more general and severe than normally encountered. There was also an area of very heavy beetle concentration, surrounding and including both metropolitan and suburban New York City, at many points in which area beetles were numerous enough to cause severe foliage injury. Throughout the remainder of the area of general distribution, comprising the greater part of New Jersey and eastern Pennsylvania, the infestation was not generally as heavy as in 1937, except in restricted tracts. However, during the 1938 season infestations heavy enough to cause obvious tree injury were present in approximately 7,310 square miles, or nearly half of the entire area considered generally infested.

In New England there was in 1938 a general increase in beetle abundance at the isolated colony sites in the more southern part of the range in Connecticut, Massachusetts, and Rhode Island. The natural dispersion of the insect has now carried it into the southwestern corner of Connecticut, where it may be expected to eventually fuse with developing local colonies. In 1938 several heavy but restricted infestations were found for the first time in the Berkshire area in southwestern Massachusetts. In the more northern portion of the range of the insect in New England, there has been little if any increase this year, while at some sites in New Hampshire beetles appear to have been somewhat scarcer than in previous years.

ASIATIC GARDEN BEETLE

No general scouting has been carried on this year to determine the spread and abundance of the Asiatic garden beetle, but observations during the active season in July and August indicate a more or less general increase in numbers this year in Connecticut, on Long Island, and in infested portions of northern New Jersey. This is the first time in several years that this upward trend has been noted. In the infested areas in eastern Pennsylvania and in west-central New Jersey beetles were fully as abundant this year as last.

The Japanese weevil (Calomycterus setarius Roelofs) first recorded from the United States in New York in 1929, was recorded from Connecticut in 1932, from Pennsylvania and Maryland in 1935, and was found in Massachusetts for the first time in 1933. During the season of 1938, this weevil was also reported from Connecticut, Maryland, and Pennsylvania.

Dialeurodes chittendeni Laing was reported from Connecticut for the first time in 1938. It was abundant in a planting of rhododendron at Greenwich. It was also found during the season in Los Angeles County, Calif., on mountain laurel which had originated in Tennessee. The insect had previously been recorded from New York, Pennsylvania, Maryland, West Virginia, Tennessee, and Washington.

ROSE MIDGE

During the last 2 or 3 years, the rose midge, known chiefly as a serious pest of greenhouse roses since 1886, has suddenly appeared as a serious threat to garden roses. Its occurrence on out-of-door roses has been rare and unusual, the earliest record in this country being that by Dr. G. C. Hewitt in a garden at London, Ontario (Can. Ent. Rept. 1915, p. 33). Apparently the first record of its occurrence on garden roses in the United States was in 1916, reported by C. R. Crosby and M. D. Leonard, and published in the First American Rose Annual for 1916. No further references appeared in literature from that time until 1935, when this pest was reported as injuring garden roses in a number of localities, viz., Grand Rapids, Mich.; Elyria, Ohio; Clifton Springs, Buffalo, and Long Island, N. Y.; Indianapolis, Ind. (July 1937); and Roanoke, Va. (1937). Some of these reports indicated that the infestations were of 2 or 3 years' standing. During the summer of 1938, an infestation at Woodridge, D. C., was discovered. Information received from members of the American Rose Society indicated that serious trouble was experienced during the past season in localities where it has become established. The indications are that this insect is on the ascendency and may become a real menace to the successful growing of garden roses. On garden roses the midge causes the same type of injury as it does on roses grown under glass. The new shoots, including the flower and leaf buds are attacked as soon as they develop. Such new growth becomes distorted and later turns brown and dies. As a result, no flowers are produced on infested plants. The first crop of flowers may escape attack but thereafter, i.e., from the middle of July and extending throughout the season until frost, the injury continues. All kinds of roses are subject to attack. (C. A. Weigel, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

A root weevil, Pachyneus opalus Oliv., was bred on beans in Florida. This seems to be the first record of this insect from a leguminous plant.

Monotoma parallela Lec. was collected in cereals in Kansas in 1934 and reported this year. This appears to be the first record of this insect in stored cereal products.

Specimens recently identified by C. T. Green as Phytomyza atricornis Meig. were reared from mines in leaves of Cynara scolymis (artichoke) at Half Moon Bay, Calif., by W. H. Lange. This appears to be the first host record for this species.

SCREWORMS

Observations during the winter of 1937-38 showed that the screwworm fly (Cochliomyia americana C. and P.) survived this period in its normal overwintering area in the southern, southwestern, and southeastern parts of the United States. However, there was no evidence indicating that the fly was able to build up any considerable winter population and that there would be an unusual outbreak in or an extensive migration of the pest to more northern areas during the following spring and summer months. Throughout the season in the Southwest, where the fly overwintered, the population appeared not to be above that of the preceding 2 years. In the eastern section of the Edwards Plateau in Texas the number of screwworm flies increased enormously following heavy rains in July, with a consequent heavy infestation of range livestock. During the early part of the summer conditions were apparently favorable for the migration of the insect from Texas northward, either by natural dissemination or by the shipment of infested animals. This resulted in a rather general but not unusually severe outbreak of the fly in Oklahoma; a relatively small number of infestations in a few counties in southwestern and western Arkansas, although heavy infestations were reported in Washington, Pike, Jefferson, Chicot, and Desha Counties; a rather severe outbreak in 27 counties along the southern border of Kansas; and serious outbreaks in Stark and Scott Counties, Ill.; from which counties the pest spread and caused a heavy incidence of cases in several adjoining counties.

In the Southeast screwworms appeared to be somewhat worse in Florida during 1938 than in 1937. In Georgia there was a general infestation over the State, the counties in the southern half being more severely affected than the others. South Carolina reported that the season of 1938 was the worst screwworm year that that State had experienced, the heaviest infestations occurring in Beaufort and Saluda Counties. From 5- to 20-percent infestation of livestock by screwworms was reported in a few counties in southeastern Alabama, other counties in that section of the State reporting 1- to 2-percent infestations or less.

AMERICAN DOG TICK

In the Eastern States reports reaching the Bureau of Entomology and Plant Quarantine indicated that adults of Dermacentor variabilis Say, transmitter of Rocky Mountain spotted fever, appeared earlier in the season than in 1937; also that this species was considerably more numerous throughout its entire range. Three new locality records of the occurrence of this tick were recorded by the Bureau for Virginia. Seven additional records of the appearance of the tick in Nebraska, the first obtained since 1911, and two records of its occurrence in New Hampshire, the first since 1936, were obtained. In general, there appeared

to be no increase over 1937 in the number of spotted fever cases caused by the bites of this tick in the eastern area, but apparently the disease was reported for the first time in Mississippi in 1938. (E. C. Cushing, Bureau of Entomology and Plant Quarantine, U. S. D. A.)

NEW RECORDS OF INSECTS

A mite, Penthaleus major Duges, was first taken by E. O. Essig on March 17, 1922, near San Jose, Calif., where it was attacking the springtail Achorutes armatus Nicolet, swarming on the surface of fresh water in a drainage ditch. Specimens were sent to H. E. Ewing, who identified them as Penthaleus sp. In the same month L. R. Cody called Dr. Essig's attention to injuries to peas growing along the foothills near Warm Springs, Alameda County, Calif., by what appeared to be this species. The damage was considerable, but was restricted and for only a short time. A similar infestation recurred the following year, but none has been observed since. In July 1938 a small lot of the same species was collected by A. J. Nicholson at Riverside. A mounted slide of the mite was sent to H. Womersley, Adelaide, Australia, by Dr. Essig. In a letter dated July 13, 1938, Mr. Womersley states that the species is identical with the pea mite of that country, P. major Duges.

A single male moth, Laspeyresia coniferana Ratz. (det. by C. Heinrich), reared from larvae boring in the bark of white pine at Hartsdale, N. Y., is the second American specimen of this European species to be received. The first specimen was recorded from Croton River, N. Y., on June 27, 1934. Apparently the species is well established in Westchester County.

A European leafhopper, Athysanus schenki Kirsch. (det. by P. W. Oman), not previously reported from America, was collected in abundance in the Pacific Northwest in 1935. Material in collections reveals the following American records for the species: (1) Idaho: Moscow, Sept. 30, 1927 (Schull); Moscow, Oct. 21, 1929 (Gillett); Moscow Mountain, Sept. 14, 1931 (Gillett); Coeur d'Alene, July 9, 1935 (Oman); Cataldo, July 9, 1935 (Oman). (2) Washington: Ritzville, July 8, 1935 (Oman); south of Spokane, July 9, 1935 (Oman). (3) Oregon: Mt. Hood (post office), July 3, 1935 (Oman).

One specimen, Tarachidia heonix Dyar (det. by J. F. G. Clarke), a species of Noctuidae from Brewster County, Tex., is the first individual of this species recorded from the United States. In addition to the above specimen, there are in the National Museum the type and two other specimens, all from Mexico.

European longhorn beetles, Stromatium fulvum Villiers (det. by W. S. Fisher), were reported as having emerged from the woodwork of a living room in Camden, N. J. This beetle has not been known to have become definitely established in the United States.

Specimens of Diprion frutetorum (F.) (det. by Grace A. Sandhouse) from Lamination, N. J., was taken in litter under red pine. This apparently represents the first identification of the species from the United States, although one specimen in the National Museum labeled as being from Ithaca, N. Y., and another from Rye, N. Y., are evidently the same. These were taken in 1931 and at that time were identified by W. Middleton as Diprion sp. The species has been known in Canada since 1934, in the Niagara Falls area.

The oriental rat flea (Xenopsylla cheopis (Rothschild)), the chief transmitter of bubonic plague to man, has for many years been known to occur in the warmer port cities of the United States but it has been thought that the colder climate of the interior would probably prevent its development there. Nevertheless, in 1934 it was found at Ames, Iowa, and in 1936 at St. Paul, Minn., and H. E. Ewing and Irving Fox now record it from two additional inland and northern localities, namely, Urbana, Ill., and Youngstown, Ohio.

Trachyphloeus bifoveolatus Beck (det. by L. L. Buchanan), a weevil previously recorded from only two or three localities in the Eastern States, was recently found in abundance on the porches of houses and, to a lesser extent, indoors at Portland, Oreg.

Two specimens of Muscina pabulorum (Fall.) (det. by D. G. Hall), a relatively uncommon European species, were collected during the past fall in the vicinity of Boston, Mass., by Richard Dow, Curator, Boston Society of Natural History. This is the first North American record for the species.

Ants, Eciton (Labidus) caecum (Latr.) (det. by M. R. Smith), were collected on July 8, 1938, at Menard, Tex., by Roy Melvin, who reported that they were attacking newly emerged adults of the primary screwworm (Cochliomyia americana C. and P.).

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